TOSHIBA

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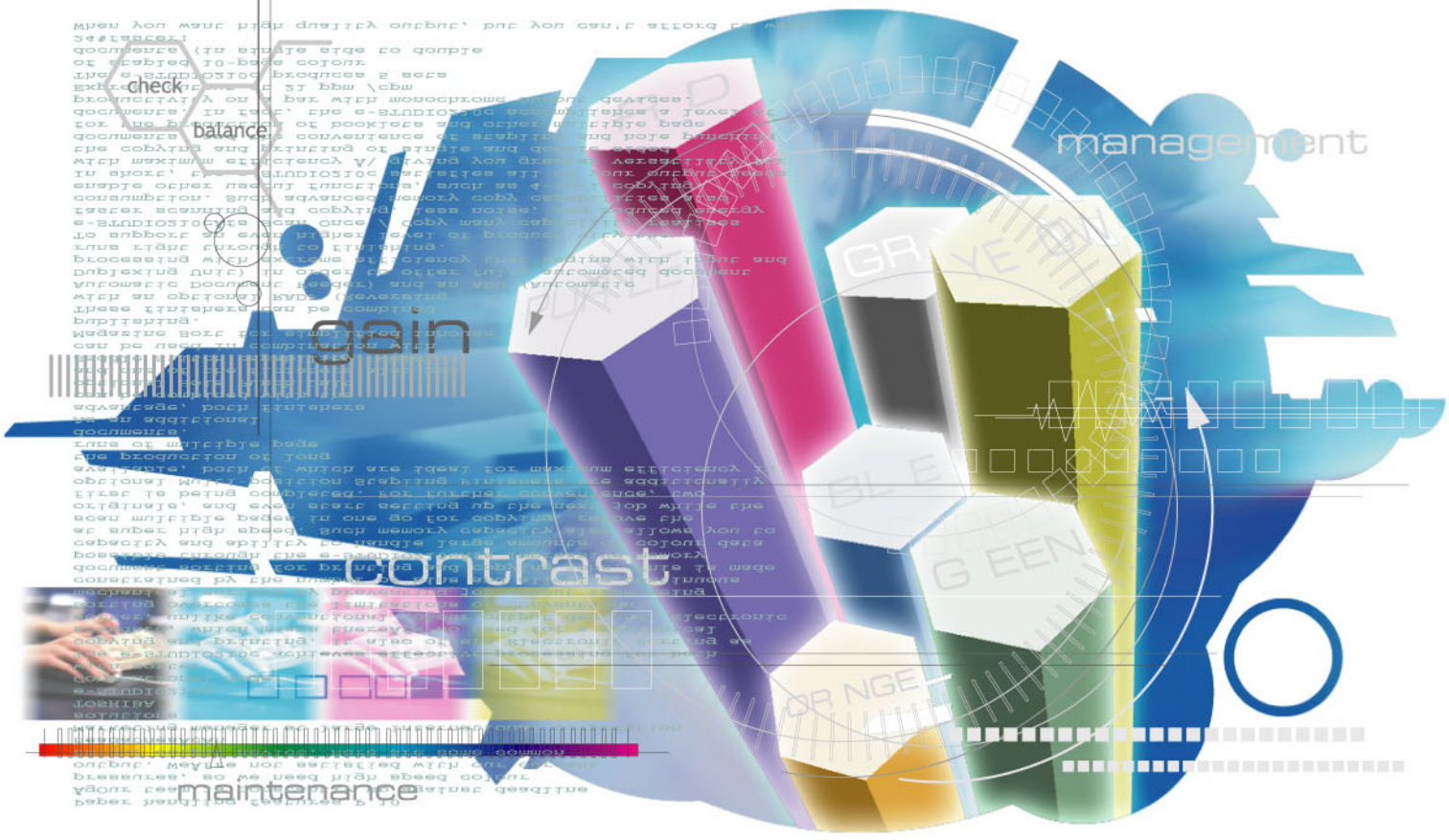
e-STUDIO2500c/3500c/3510c

Satisfying Specific Customer Needs for Designed Image Quality

Imaging Manual



File No. SME06002500
R060721C4500-TTEC
Ver00_2006-09

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Revision Record

File No. SME06002500

Date	Rev.No	Item	Descriptions	Remarks
September, 2006	00	---	Issue of the first version	

Purpose of the Imaging Manual

The Imaging Manual is intended for customers using the Toshiba e-STUDIO2500c/3500c/3510c with a variety of specific needs and inquiries for high image quality, such as:

- How to obtain a clearer copy image
- How to maintain the current image quality
- How to make the text look sharper on the copy

The Toshiba MFPs are factory-configured to provide image quality settings that satisfy the majority of customers. However, these settings may not be necessarily optimal for the specific needs of all customers. Proper image quality adjustments can satisfy such needs. Most of the adjustments described in this manual must be performed by a service technician, but a few of them can also be performed by the customer.

It is strongly recommended that this manual be fully utilized by not only the service technician, but also the sales representative, who also has opportunities of obtaining customer feedback on the image quality. This manual helps the sales representative to study and comprehend what kind of customer requirements for image quality can be satisfied, to make proposals to customers to improve image quality, and to communicate the customers' specific requirements with ease to the service technician. In addition, this manual is expected to facilitate the marketing of Toshiba MFPs to prospective customers that have a specific demand for image quality and the expansion of sales.

The adjustments described in this manual are all based on the requests of actual customers. Meeting their specific wishes will only add to their satisfaction.

Please remember to read "Precautions after the completion of the adjustment," to which you must pay close attention, after finishing the adjustment.

Precautions in Servicing

- For adjustments to be performed by the service technician, the precautions given in the Service Manual must be stringently followed. The adjustments must be performed by a qualified service technician who has completed the service training course.
- The default listed mentioned in this manual may be different from the actual ones, due to the timing of shipping (firmware version). But note that the recommended values and acceptable value range stated in this manual remain the same.

Icons

The following icons used in this manual denote the following:

: • Copy ——— An adjustment having an effect on copying in the Black mode (excluding the Image smoothing mode)
• Printer ——— An adjustment having an effect on Black and White mode printing
* The adjustment will be effective, if "Black and White" is selected from among the "Color" options on the Windows printer driver or if "Mono" is selected from among the "Color Type" options on the Macintosh print dialog.
• Scan ——— An adjustment having an effect on scanning in the Black mode

 : • Copy ——— An adjustment having an effect on copying in the Image smoothing mode in the Black mode
• Scan ——— An adjustment having an effect on scanning in the Gray scale mode

: • Copy ——— An adjustment having an effect on copying in the Full color mode
• Printer ——— An adjustment having an effect on full-color printing
* The adjustment will be effective, if "Auto" or "Color" is selected from among the "Color" options on the Windows printer driver or if "Auto" or "Color" is selected from among the "Color Type" options on the Macintosh print dialog.
• Scan ——— An adjustment having an effect on scanning in the Full color mode

: • Copy ——— An adjustment having an effect on copying in the Auto color mode
• Scan ——— An adjustment having an effect on scanning in the Auto color mode

PCL6 : An adjustment having an effect on printing with the Windows PCL6 emulation printer driver

PS3 : An adjustment having an effect on printing with the Windows PS3 emulation printer driver

Mac : An adjustment having effect on printing with the Macintosh printer driver

Scan to Box : An adjustment having an effect on an image stored in the e-Filing box by the scanning functions (including Scan to Box, Scan to File and Scan to E-mail)

Copy to Box : An adjustment having an effect on an image stored in the e-Filing box by the copying functions (Copy to Box)

Print to Box : An adjustment having an effect on an image stored in the e-Filing box by the printing functions (Print to Box)

Fax to Box : An adjustment having an effect on an image stored in the e-Filing box by the Fax and Internet Fax functions (including Received Fax to Box and Received Internet Fax to Box)

Table of Contents

1. General Adjustments – Copying, Printing and e-Filing (Output from Box)

1.1 To Obtain a Darker Image

1.2 To Adjust the Density of an Entire Copy

1.2.1 To Adjust the Density on a Solid Colored Image

1.2.2 To Adjust the Density on a Photo or Gradational Image

1.3 To Achieve the Image Quality Most Suitable for the Paper Used

(To eliminate blur and graininess from an image)

1.4 To Minimize Variations in the Image Quality under the Operating Conditions

(To optimally program image quality control)

1.5 To Correct Out-of-Registration Colors

2. Copier-specific Adjustments

2.1 To Copy Text Clearly (To eliminate faint, smudged or blurred text)

2.1.1 To Adjust the Copy Image Quality in the Black Mode

2.1.2 To Adjust the Copy Image Quality in the Full Color Mode

2.1.3 To Adjust the Copy Image Quality in the Auto Color Mode

2.2 To Closely Match the Color Balance of the Original

2.3 To Improve the Reproducibility of Gray

2.4 To Copy in Vivid Colors

2.5 To Make the Pale Area of the Original Look Darker and Sharper

(To improve the highlight reproducibility)

2.6 To Eliminate the Background Color

2.6.1 To Adjust the Copy Image Quality in the Black Mode

2.6.2 To Adjust the Copy Image Quality in the Full Color Mode

2.7 To Avoid Copying the Image Seen through the Back of a Page Printed on Thin Paper

2.7.1 To Adjust the Copy Image Quality in the Black Mode

2.7.2 To Adjust the Copy Image Quality in the Full Color Mode

2.8 To Eliminate Moiré

2.9 To Copy Sharply (To enhance sharpness)

2.10 To Make Photo Edges Look Softer

2.11 To Make Solid Filled Bold Text (Logo) Highly Colored

2.11.1 To Adjust the Copy Image Quality of a Black Logo

2.11.2 To Adjust the Copy Image Quality of a Colored Logo

2.12 To Sharply Contrast the Hues of Highlighters on the Copy

2.13 To Obtain a Good Color Balance on Thick Paper

2.14 To Obtain Smooth Gray-Scale Photo Images

2.15 To Change the Threshold in Auto Color Mode

(To change the threshold between the Full Color mode and the Black mode to meet the user's needs)

2.16 To Adjust the Twin-Color Copy Image Quality
2.16.1 To Adjust the Tint of Colors other than Black
2.16.2 To Adjust the Reproducibility of Black in the Red and Black Mode
2.16.3 To Adjust the Boundary between Black and Colors other than Black
2.17 To Adjust the Image Quality Scanned from the RADF

3. Printer-specific Adjustments

3.1 To Maintain a Steady Color Balance
3.2 To Maintain a Steady Color Balance on Thick Paper or Special Paper
3.3 To Obtain the Desired Color Balance
3.4 To Closely Match the Color Balance on the Monitor
3.5 To Maintain a Uniform Gray Hue
(To maintain Consistency in Gray among Text, Photos and Graphics)
3.6 To Use Only the Black Toner to Reproduce Gray Areas
(To use only the black toner to reproduce black-and-white photos or gradational images)
3.7 To Easily Adjust the Overall Brightness
3.8 To Adjust the Overall Saturation
3.9 To Easily Adjust the Overall Contrast
3.10 To Obtain a Sharper Print Image
3.11 To Obtain a Softer Image
3.12 To Make Low-resolution Data Look Finer (To soften an image)
3.13 To Eliminate Smudges from Highly Colored Text and Lines
(To prevent toner scattering around text and lines where a large amount of toner is used)
3.14 To Clearly Print Light-Colored Thin Lines or Text
3.14.1 To Adjust the Print Image Quality in the Color Mode
3.14.2 To Adjust the Print Image Quality in the Black and White Mode
3.15 To Make the Light-Colored Area Darker on the Printout
3.16 To Clearly Print Thin Lines/Double Lines
3.17 To Decrease the Image Density and Save Toner (To Print in the Toner Save Mode)
3.18 To Adjust the Image Density in the Toner Save Mode
3.19 To Print Illegible Gray or Colored Text in Black
3.20 To Ignore Blank Pages for Printing
3.21 To Sharply Print Black Text
3.22 To Prevent Dark Toner from Coming Off
3.23 To Register the Image Quality Adjusted Corresponding to a Preference
(To use the Custom Color Settings)
3.24 To Print a Full-Color Original in Two Colors

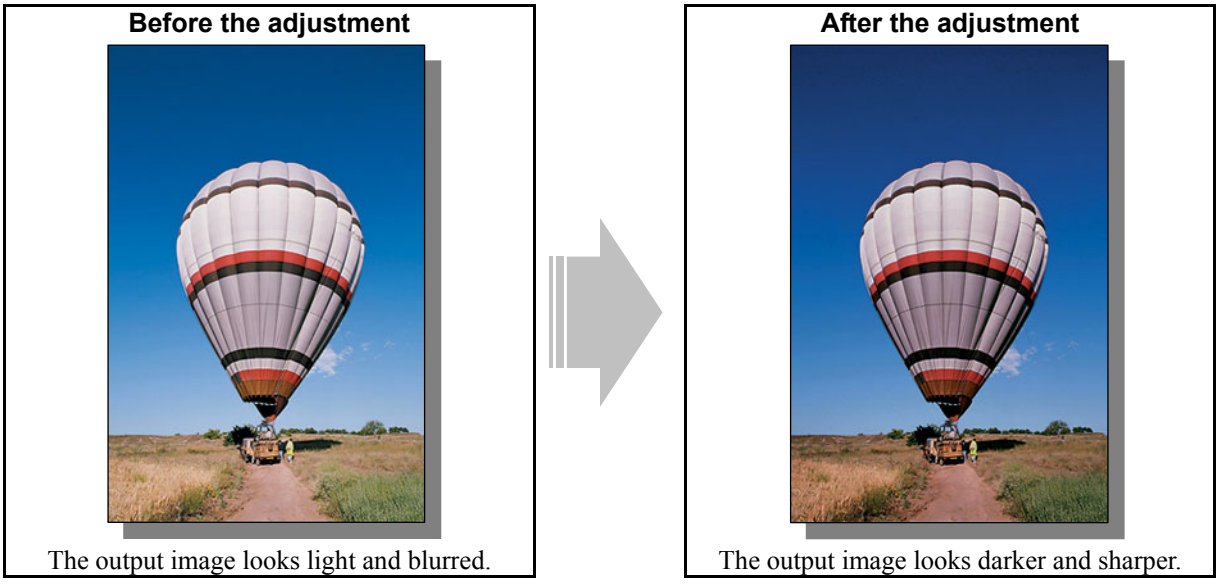
4. e-Filing-specific Adjustments

4.1 To Clearly Store a B/W Image in the Auto Color Mode
4.2 To Store an Original while Reducing the File Size
4.3 To Store a Color Photo Image, while Minimizing Moiré
4.4 To Match the Color Balance on the Original
(To adjust the color balance in Print to Box)
4.5 To Scan and Print, while Minimizing Moiré
4.6 To Finely Print the Image Stored in the e-Filing box
(To print images stored through Copy to Box or Print to Box)
4.7 To Store an Image Suitable for Displaying on the Monitor or Image Editing
4.8 To Finely Print Color Images Scanned and Stored
(To print images stored through Scan to Box)

5. Scanning-specific Adjustments

5.1 To Clearly Scan Text (To reduce noise around text)
5.2 To Scan an Original, while Eliminating the Background Color
(To eliminate the background density)
5.3 To Clearly Scan and Print an Original in Black and White
(To improve gradation and reduce graininess)
5.4 To Scan the Original, while Reducing the File Size
5.4.1 To Reduce the File Size by Changing the Options when Scanning the Original
5.4.2 To Reduce the File Size in Slim PDF
5.5 To Sharply Scan the Original (To increase the sharpness intensity)
5.6 To Scan an Original, while Enhancing Black
5.7 To Scan an Original with the Desired Gradation
5.8 To Register the Original Mode Optimal for a Particular Type of Original
(To have "Custom" selected)

1.1 To Obtain a Darker Image


Before the adjustment
The output image looks light and blurred.
After the adjustment
The output image looks darker and sharper.

❑ Explanation

When an original containing photo images or gradational images is printed, the output image sometimes looks light and blurred. Perform image quality control or automatic calibration, and adjust the transfer roller bias output, in order to obtain a darker and sharper image.

❑ Procedures

* Perform the adjustment in accordance with the procedures below.
* Only the service technician must use procedures (1), (3) and (4).
* Both the service technician and the user can use procedure (2).

(1) Enter adjustment mode [05]. Select code [396]. Press the [START] button.

• Image quality control will be forcibly performed to correct variations in density.

After exercising image quality control, use the next procedure.

(2) Perform automatic calibration to correct variations in image density.

* "ADMIN" is selected from among the "CALIBRATION DISPLAY LEVEL" options by default. In other words, an administrator is authorized to operate automatic calibration. But "USER" can also be selected to allow the user to operate it. Refer to the User Functions Guide for further information regarding how to select the "CALIBRATION DISPLAY LEVEL" option.

To adjust the copy image quality

Use steps (a) through (i) to perform automatic calibration.

(a) Press the [USER FUNCTIONS] button on the Control Panel to enter the "User Functions" menu.
(b) Press the [ADMIN] button.
(c) Enter the 6 to 10 digit administrator password. Press the [ENTER] button.
(d) Press the [GENERAL] button.
(e) Press the [CALIBRATION] button.
(f) Press the [COPY] button.
(g) Press the [CALIBRATION] button to print out the test chart.
(h) Place the printed test chart on the original glass.
(i) Press the [START] button to perform calibration. When the calibration comes to an end, the message "Scanning and calibrating" will disappear.

* As a result of the above steps, the copy image quality will be corrected in the Full Color mode and Black and White mode simultaneously.

To adjust the print image quality

Use steps (a) through (j) to perform automatic calibration.

(a) Press the [USER FUNCTIONS] button on the Control Panel to enter the "User Functions" menu.
(b) Press the [ADMIN] button.
(c) Enter the 6 to 10 digit administrator password. Press the [ENTER] button.
(d) Press the [GENERAL] button.
(e) Press the [CALIBRATION] button.
(f) Press the [PRINT] button.
(g) Press the [CALIBRATION] button to print out the test chart.
(h) Place the printed test chart on the original glass.
(i) Press the [START] button to perform calibration. When the calibration comes to an end, the message "Scanning and calibrating" will disappear.
(j) The message "Is a result made to reflect?" will appear. Press the [YES] button.

<Hint> During automatic calibration, the automatic image quality control option is also available. This option is particularly recommended for a user who frequently adjusts the image quality. However, performing this option increases each adjustment time.

Use steps (a) to (b) to perform automatic image quality control.

(a) Enter setting mode [08]. Set "1" for code [9059].

Value for 08-9059	Image quality control operation during automatic calibration
0	OFF (default)
1	ON (with paper selection disabled)
2	ON (with paper selection enabled)

(b) Perform automatic calibration.

* Refer to the above procedure to perform automatic calibration.
* When the [COPY] button or [PRINT] button is pressed after step (f), image quality control will be automatically performed.

After performing automatic calibration, print and check the image quality.
If further image quality adjustments are still necessary, use the next procedure.

(3) Enter adjustment mode [05]. Change the values for codes [2934 to 2937] to adjust the transfer (2nd transfer) roller bias output.

(Adjust the offset voltage of transfer roller bias so as to increase the density of the image.)

• The code to use varies according to the paper type. Adjust the value for [05] code corresponding to the paper type for which you would like to improve the image quality. Set the value within a range of "2" to "8" to obtain the highest density of the image.

Paper type			[05] code	Subcode	Recommended value	Acceptable value range	Default
Full color	Front	Plain paper	05-2934	0	2 to 8	0 to 10	5
		Thick 1		1			
		Thick 2		2			
		Thick 3		3			
		OHP		4			
		Special 1		5			
		Special 2		6			
		Recycled paper		7			
	Back	Plain paper	05-2935	0	2 to 8	0 to 10	5
		Thick 1		1			
		Thick 2		2			
		Thick 3		3			
		OHP		4			
		Special 1		5			
		Special 2		6			
		Recycled paper		7			
Black	Front	Plain paper	05-2936	0	2 to 8	0 to 10	5
		Thick 1		1			
		Thick 2		2			
		Thick 3		3			
		OHP		4			
		Special 1		5			
		Special 2		6			
		Recycled paper		7			
	Back	Plain paper	05-2937	0	2 to 8	0 to 10	5
		Thick 1		1			
		Thick 2		2			
		Thick 3		3			
		OHP		4			
		Special 1		5			
		Special 2		6			
		Recycled paper		7			

* "Front" refers to the printed side in the simplex mode or the side that is delivered facing upwards in the duplex mode. "Back" refers to the printed side that is delivered facing downwards in the duplex mode.

* The table below shows you the acceptable paper weight for the paper type.

Paper type	Acceptable paper weight	
Plain paper	64 to 105 g/m²	16 to 20 lb. Bond
Thick 1	106 to 163 g/m²	Max. 60 lb. Cover
Thick 2	164 to 209 g/m²	Max. 110 lb. Index
Thick 3	210 to 256 g/m²	Max. 140 lb. Index

• After adjusting the transfer roller bias output, perform automatic calibration in the same manner as in procedure (2).

<Hint> The transfer voltage increases as the set value is increased. It is usually recommended that the set value be increased, when you print on thick paper or paper with asperities on its surface. On the other hand, the set value should be decreased, when you print on thin paper.

After adjusting the density, print and check the image quality.
If further image quality adjustments are still necessary, use the next procedure.

(4) Check the life of the consumables (particularly the drum, developer material and fuser unit) and replace them, if necessary.

• When replacing any consumable, use steps (a) to (c).

(a) Enter the PM support mode. Reset the counter corresponding to the replaced consumable to "0."
* For further information regarding the PM support mode, refer to the Service Handbook.

(b) Enter adjustment mode [05]. Select code [396]. Press the [START] button.
• Image quality control will be performed and the image quality control value will be initialized.

(c) Perform automatic calibration in the same manner as in procedure (2).

* After replacing any consumable, remember to reset the counter corresponding to it to "0." Otherwise, it may cause a loss in MFP performance, including degradation in the image quality and a reduction in the life of the consumables.

* While replacing any consumable, also check the slit glass in the laser optical unit, and thoroughly clean it, if it is soiled.

❑ Precautions after the completion of the adjustment

Nothing in particular.

❑ Remarks

• Enter the value mentioned in the procedures or one within the recommended value range for the adjustment. Otherwise, it may cause a loss in MFP performance, including degradation in the image quality and a reduction in the life of the consumables.

• If printing on another type of paper causes a problem with the image quality after the adjustment, return the set values (for codes 05-2934 to 2937) to the default (set value: 5) and then perform the adjustment again.

• When replacing any consumable, refer to the relevant information in the Service Manual and Service Handbook.

1.2 To Adjust the Density of an Entire Copy

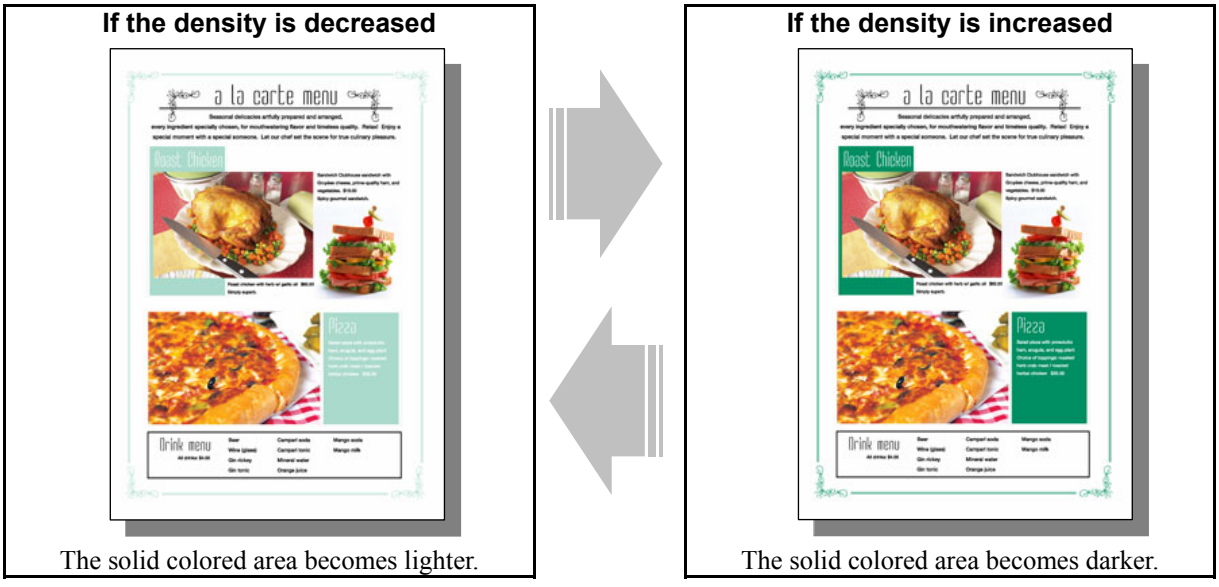
❑ Explanation

The density on a solid colored image and a photo or gradational image (halftones) can be adjusted as desired by the user.

❑ Procedures

* The use procedure varies, depending on whether you are going to adjust the density on a solid colored image or a photo or gradational image. Refer to "To Adjust the Density on a Solid Colored Image" in order to adjust the density on a solid colored image. Refer or "To Adjust the Density on a Photo or Gradational Image" in order to adjust the density on a gradational image (halftones).

1.2.1 To Adjust the Density on a Solid Colored Image



❑ Explanation

A particular color can be intensely darker or lighter, depending on the type of paper or original used. Adjust the developer bias output, in order to adjust the amount of toner on the solid colored area and obtain the image quality the user desires.

❑ Procedures

* The service technician must perform the adjustment in accordance with the procedures below.

(1) Enter setting mode [08]. Change the value to adjust the density of a solid area during the copying/printing operation.

• Use steps (a) to (c) to perform the adjustment.

(a) Enter setting mode [08]. Change the values for codes [2513 to 2515] to adjust the developer bias output value.

• Decreasing the value will make the solid colored area become lighter (decrease the amount of toner on the solid colored area). On the other hand, increasing the value will make the solid colored area become darker (increase the amount of toner on the area).

* The value to use varies according to the paper type and color to adjust. Check the code to use in accordance with the following "Code" list, and refer to the "Value" list to select a proper value.

Code

Paper type		Color to adjust	[08] code	Subcode
Full color	Plain paper	Y (yellow)	08-2513	0
		M (magenta)		1
		C (cyan)		2
		K (black)		3
	Thick	Y (yellow)	08-2514	0
		M (magenta)		1
		C (cyan)		2
		K (black)		3
Black			08-2515	---

Value

Value	Correction value for developer bias output	Density of the solid colored area
0	Value automatically set −100	Light
1	Value automatically set −80	↑
2	Value automatically set −60	↑
3	Value automatically set −40	↑
4	Value automatically set −20	↑
5	Value automatically set	↑
6	Value automatically set +20	Default
7	Value automatically set +40	↓
8	Value automatically set +60	↓
9	Value automatically set +80	↓
10	Value automatically set +100	Dark

<Hint> Adjust the values for the following codes, in order to adjust colors with RGB.

Adjustment of R (Red): Adjust Y (Yellow) and M (Magenta).

Adjustment of G (Green): Adjust Y (Yellow) and C (Cyan).

Adjustment of B (Blue): Adjust M (Magenta) and C (Cyan).

(b) Enter adjustment mode [05]. Select code [396]. Press the [START] button.

• Image quality control will be forcibly performed and the image density will be corrected.

<Note> The above corrections will be effective immediately after the values for codes [08-2513 to 2515] are changed. After changing the values for codes [08-2513 to 2515], remember to perform image quality control for code 05-396.

(c) After completing image quality control, print and check the print image quality.

Repeatedly use steps (a) to (c) as necessary, to select a proper value.
If further image quality adjustments are still necessary, use the next procedure.

(2) Check the life of the consumables (particularly the drum, developer material and transfer belt unit) and replace them, if necessary.

• When replacing any consumable, use steps (a) to (b).

(a) Enter the PM support mode. Reset the counter corresponding to the replaced consumable to "0."

* For further information regarding the PM support mode, refer to the Service Handbook.

(b) Enter adjustment mode [05]. Select code [396]. Press the [START] button.

• Image quality control will be performed and the image quality control value will be initialized.

* After replacing any consumable, remember to reset the counter corresponding to it to "0." Otherwise, it may cause a loss in MFP performance, including degradation in the image quality and a reduction in the life of the consumables.

* While replacing any consumable, also check the slit glass in the laser optical unit, and thoroughly clean it, if it is soiled.

❑ Precautions after the completion of the adjustment

• The adjustment may possibly cause an increase in the amount of toner consumed, scattering of the toner, diminished photo images or gradations (less accurate reproducibility of halftones), extremely dark images (decreased resolving power), extremely light images (faint thin lines), and shorten the life of the consumables. Therefore, carefully perform the adjustment, while checking the copy or print image.

• No effect of the adjustment may appear, depending on the operating environment of the MFP. Therefore, carefully perform the adjustment, while checking the copy or print image.

❑ Remarks

• The effect of the adjustment may vary, depending on the usage pattern of the consumables, such as the developer material and drum, and the operating environment of the MFP.

• When replacing any consumable, refer to the relevant information in the Service Manual and Service Handbook.

1.2.2 To Adjust the Density on a Photo or Gradational Image

If the density is decreased

An original containing halftones, such as a photo image becomes lighter.

If the density is increased

An original containing halftones, such as a photo image becomes darker.

❑ Explanation

A particular color can be intensely darker or lighter, depending on the type of paper or original used. Adjust the intensity of the laser, in order to adjust the density on the photo or gradational image (halftones) and obtain the image quality the user desires.

❑ Procedures

* The service technician must perform the adjustment in accordance with the procedures below.

(1) Enter setting mode [08]. Change the value to adjust the image density of halftones during the copying/printing operation.

• Use steps (a) to (c) to perform the adjustment.

(a) Enter setting mode [08]. Change the values for codes [2525 to 2525] to correct the intensity of the laser.

• Decreasing the value will make a photo or gradational image become lighter, easily blurring the image, but it will increase the gradation. On the other hand, increasing the value will make the photo or gradational image become darker and clearer, but it will decrease the gradation.

* The value to use varies according to the paper type and color to adjust. Check the code to use in accordance with the following "Code" list, and refer to the "Value" list to select a proper value.

Code

Paper type		Color to adjust	[08] code	Paper type
Full color	Plain paper	Y (yellow)	08-2525	0
		M (magenta)		1
		C (cyan)		2
		K (black)		3
	Thick	Y (yellow)	08-2526	0
		M (magenta)		1
		C (cyan)		2
		K (black)		3
Black			08-2527	---

Value

Value	Correction value for intensity of the laser	Density on the photo/gradational image
0	Value automatically set −50	Light (gradation: more)
1	Value automatically set −40	↑
2	Value automatically set −30	↑
3	Value automatically set −20	↑
4	Value automatically set −10	↑
5	Value automatically set	Default
6	Value automatically set +10	↓
7	Value automatically set +20	↓
8	Value automatically set +30	↓
9	Value automatically set +40	↓
10	Value automatically set +50	Dark (gradation: less)

<Hint> Adjust the values for the following codes, in order to adjust colors with RGB.

Adjustment of R (Red): Adjust Y (Yellow) and M (Magenta).

Adjustment of G (Green): Adjust Y (Yellow) and C (Cyan).

Adjustment of B (Blue): Adjust M (Magenta) and C (Cyan).

(b) Enter adjustment mode [05]. Select code [396]. Press the [START] button.
• Image quality control will be forcibly performed and the image density will be corrected.

<Note> The above corrections will be effective immediately after the values for codes [08-2525 to 2527] are changed. After changing the values for codes [08-2525 to 2527], remember to perform image quality control for code 05-396.

(c) After completing image quality control, print and check the print image quality.

Repeatedly use steps (a) to (c) as necessary to select a proper value.
If further image quality adjustments are still necessary, use the next procedure.

(2) Check the life of the consumables (particularly the drum, developer material and transfer belt unit) and replace them, if necessary.
• When replacing any consumable, use steps (a) to (b).
(a) Enter the PM support mode. Reset the counter corresponding to the replaced consumable to "0."
* For further information regarding the PM support mode, refer to the Service Handbook.

(b) Enter adjustment mode [05]. Select code [396]. Press the [START] button.
• Image quality control will be performed and the image quality control value will be initialized.

* After replacing any consumable, remember to reset the counter corresponding to it to "0." Otherwise, it may cause a loss in MFP performance, including degradation in the image quality and a reduction in the life of the consumables.

* While replacing any consumable, also check the slit glass in the laser optical unit, and thoroughly clean it, if it is soiled.

❑ Precautions after the completion of the adjustment

• The adjustment may possibly provide extremely dark images (decreased resolving power, inadequate reproducibility of gradations), and extremely light images (blurred images, faint thin lines). Therefore, carefully perform the adjustment, while checking the copy or print image.

• No effect of the adjustment may appear, depending on the operating environment of the MFP. Therefore, carefully perform the adjustment, while checking the copy or print image.

❑ Remarks

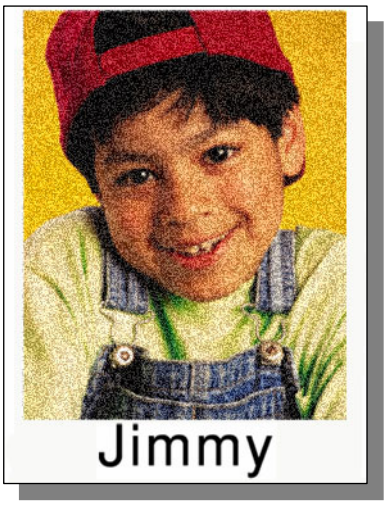
• The effect of the adjustment may vary, depending on the usage pattern of the consumables, such as the developer material and drum, and the operating environment of the MFP.

• When replacing any consumable, refer to the relevant information in the Service Manual and Service Handbook.

1.3 To Achieve the Image Quality Most Suitable for the Paper Used

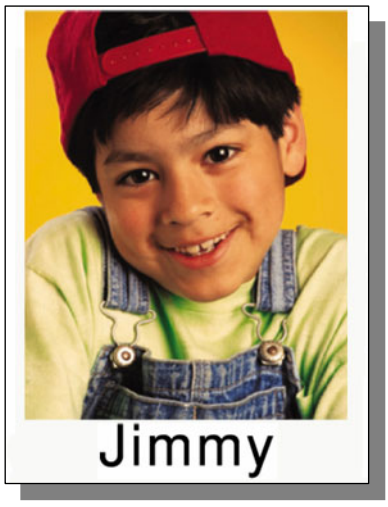
(To eliminate blur and graininess from an image)

Before the adjustment



The image looks grained, depending on the type of paper.

After the adjustment



A clear image quality, most suitable for a type of paper used, is obtained.

❑ Explanation

The image sometimes looks slightly blurred or grained on the copy or printout, depending on the type of paper used. Adjust the transfer roller bias output, in order to achieve the image quality most suitable for the paper used.

❑ Procedures

* The service technician must perform the adjustment in accordance with the procedures below.

(1) Enter adjustment mode [05]. Change the values for codes [2934 to 3937] to adjust the transfer (2nd transfer) roller bias output.
(Adjust the offset voltage of transfer roller bias so as to optimize the halftones.)

- The code to use varies according to the paper type. Adjust the value for [05] code corresponding to the paper type for which you would like to improve the image quality. Set the value within a range of "2" to "8" to optimize the halftones.

Paper type			[05] code	Subcode	Recommended value	Acceptable value range	Default
Full color	Front	Plain paper	05-2934	0	2 to 8	0 to 10	5
		Thick 1		1			
		Thick 2		2			
		Thick 3		3			
		OHP		4			
		Special 1		5			
		Special 2		6			
		Recycled paper		7			
	Back	Plain paper	05-2935	0	2 to 8	0 to 10	5
		Thick 1		1			
		Thick 2		2			
		Thick 3		3			
		OHP		4			
		Special 1		5			
		Special 2		6			
		Recycled paper		7			
Black	Front	Plain paper	05-2936	0	2 to 8	0 to 10	5
		Thick 1		1			
		Thick 2		2			
		Thick 3		3			
		OHP		4			
		Special 1		5			
		Special 2		6			
		Recycled paper		7			
	Back	Plain paper	05-2937	0	2 to 8	0 to 10	5
		Thick 1		1			
		Thick 2		2			
		Thick 3		3			
		OHP		4			
		Special 1		5			
		Special 2		6			
		Recycled paper		7			

*"Front" refers to the printed side in the simplex mode or the side that is delivered facing upwards in the duplex mode.
"Back" refers to the printed side that is delivered facing downwards in the duplex mode.

*The table below shows you the acceptable paper weight for the paper type.

Paper type	Acceptable paper weight	
Plain paper	64 to 105 g/m²	16 to 20 lb. Bond
Thick 1	106 to 163 g/m²	Max. 60 lb. Cover
Thick 2	164 to 209 g/m²	Max. 110 lb. Index
Thick 3	210 to 256 g/m²	Max. 140 lb. Index

• After adjusting the transfer roller bias output, perform automatic calibration.
*For further information regarding the procedures, refer to procedure (2) in 1.1 To Obtain a Darker Image.

<Hint> The transfer voltage increases as the set value is increased. It is usually desirable that the set value be decreased to obtain a clearly highlighted area.

After performing the adjustment, print and check the image quality.
If further image quality adjustments are still necessary, use the next procedure.

(2) Check the life of the consumables (particularly the drum, developer material and fuser unit) and replace them, if necessary.

• When replacing any consumable, use steps (a) to (c).

(a) Enter the PM support mode. Reset the counter corresponding to the replaced consumable part to "0."

* For further information regarding the PM support mode, refer to the Service Handbook.

(b) Enter adjustment mode [05]. Select code [396]. Press the [START] button.

• Image quality control will be performed and the image quality control value will be initialized.

(c) Perform automatic calibration.

* For further information regarding the procedures, refer to procedure (2) in 1.1 To Obtain a Darker Image.

* After replacing any consumable, remember to reset the counter by making it correspond to "0." Otherwise, it may cause a loss in MFP performance, including degradation in the image quality and a reduction in the life of the consumables.

* While replacing any consumable, also check the slit glass in the laser optical unit, and thoroughly clean it, if it is soiled.

❑ Precautions after the completion of the adjustment

Nothing in particular.

❑ Remarks

• Enter the value mentioned in the procedures or one within the recommended value range for the adjustment. Otherwise, it may cause a loss in MFP performance, including degradation in the image quality and a reduction in the life of the consumables.

• The desired image quality may not be obtained, depending on the type of paper used. In this case, use the recommended paper and then print or adjust the image quality.

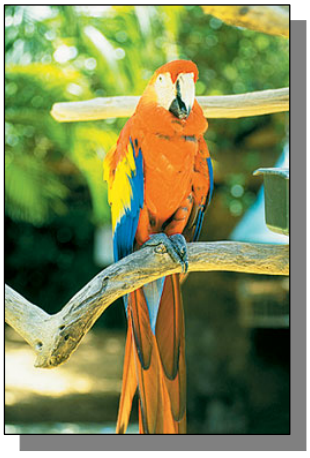
• If printing on another type of paper causes a problem with the image quality after the adjustment, return the set values (for codes 05-2934 to 2937) to the default (set value: 5) and then perform the adjustment again.

• When replacing any consumable, refer to the relevant information in the Service Manual and Service Handbook.

1.4 To Minimize Variations in the Image Quality under the Operating Conditions

(To optimally program image quality control)

Before the adjustment



The image contrast varies, depending on the date and time when copying or printing is performed or the type of job.

After the adjustment

The image quality is constantly maintained.

❑ Explanation

The image contrast may vary, depending on the date and time when copying or printing is performed or the type of copy/print job. To constantly maintain image quality, shorten the waiting period until image quality control is performed.

❑ Procedures

* The service technician must perform the adjustment in accordance with the procedures below.

(1) Enter setting mode [08]. Change the value for code [566], [570] or [572] to specify the best interval during which image quality control should be performed, according to use of the MFP.

The MFP is installed in a place where the temperature and humidity vary widely:

Set "1" (value × 5%R.H.) for code 08-570 to increase the frequency of image quality control, in response to a change in humidity.

* Image quality control will be performed, when the relative humidity changes in accordance with the specified difference from the previous image quality control. If the difference in the relative humidity exceeds the specified value, image quality control is performed first. Then a copy or print job will be performed.

Value for 08-570	Difference in relative humidity
1	5%R.H.
2	10%R.H. (default)

• After setting the value for code 08-570, forcibly perform image quality control, as follows:
Enter adjustment mode [05]. Select code [396]. Press the [START] button.

To Have Uniform Variations in the Image Quality after Return from the Auto Power Save Mode:

Set the value for code 08-571 within a range of "1" to "3" to shorten the operating condition period when image quality control is performed after the MFP is returned from the auto power save mode (time when no MFP operations are being performed and when the MFP is left for image quality control). Image quality control can now be easily performed.

* This adjustment will improve the image quality, but only if the sleep mode / auto shut off mode have been disabled ("20" is set for code 08-206). Remember that there will be no positive affect on the image quality, if the sleep mode / auto shut off mode have been enabled.

Value for 08-571	Time when the MFP is being left for image quality control
1 to 3	Performed before the MFP resumes operations after being left for 1 to 3 hour or more.
4	Performed before the MFP resumes operations after being left for 4 hours or more. (default)

• After setting the value for code 08-571, forcibly perform image quality control, as follows:
Enter adjustment mode [05]. Select code [396]. Press the [START] button.

A large number of sheets are printed (hundreds of copies or more per day) and the image quality needs to be constantly maintained:

Set the value for code 08-572 within a range of "1" to "9" (Value × 100 sheets) to reduce the accumulated number of printed sheets. It will determine the interval until the next image quality control is performed.

* After a copy or print job is completed, if the accumulated number of printed sheets exceeds the specified value, image quality control will be performed.

Value for 08-572	Accumulated number of printed sheets before image quality control is performed
1 to 9	100 to 900 sheets
10	1,000 sheets (default)

• After setting the value for code 08-572, forcibly perform image quality control, as follows:
Enter adjustment mode [05]. Select code [396]. Press the [START] button.

After performing the adjustment, print and check the image quality.
If further image quality adjustments are still necessary, use the next procedure.

(2) Check the life of the consumables (particularly the drum, developer material and transfer belt unit) and replace them, if necessary.

• When replacing any consumable, use steps (a) to (c).

(a) Enter the PM support mode. Reset the counter corresponding to the replaced consumable to "0."

* For further information regarding the PM support mode, refer to the Service Handbook.

(b) Enter adjustment mode [05]. Select code [396]. Press the [START] button.

• Image quality control will be performed and the image quality control value will be initialized.

(c) Perform automatic calibration.

* For further information regarding the procedures, refer to procedure (2) in 1.1 To Obtain a Darker Image.

* After replacing any consumable, remember to reset the counter corresponding to it to "0." Otherwise, it may cause a loss in MFP performance, including degradation in the image quality and a reduction in the life of the consumables.

* While replacing any consumable, also check the slit glass in the laser optical unit, and thoroughly clean it, if it is soiled.

❑ Precautions after the completion of the adjustment

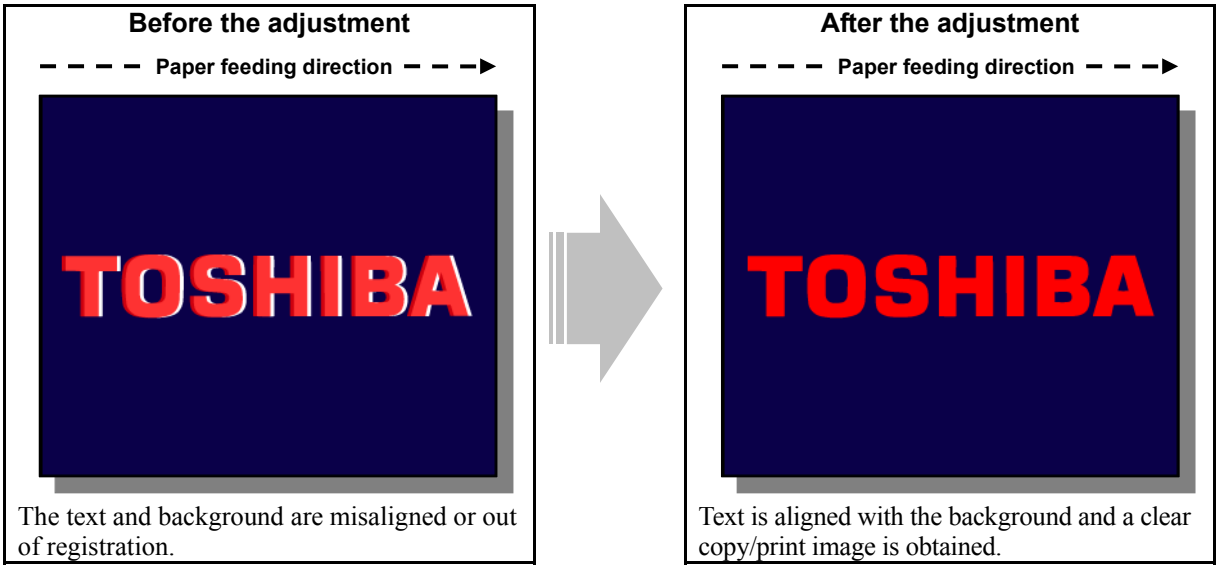
The adjustment may possibly slow down the copying or printing speed, extend the warm-up time when the MFP is returned from the auto power save mode, and shorten the life of the consumables, because of an increase in the number of times image quality control is performed. Therefore, carefully perform the adjustment, while checking the copy or print image.

❑ Remarks

• Enter the value mentioned in the procedures or one within the recommended value range for the adjustment. Otherwise, it may cause a loss in MFP performance, including slowdown in the copying or printing speed.

• When replacing any consumable, refer to the relevant information in the Service Manual and Service Handbook.

1.5 To Correct Out-of-Registration Colors


Before the adjustment
Paper feeding direction
TOSHIBA
The text and background are misaligned or out of registration.
After the adjustment
Paper feeding direction
TOSHIBA
Text is aligned with the background and a clear copy/print image is obtained.

❑ Explanation

Colors of text or a thin line are sometimes printed out of alignment. Perform color registration control, in order to print or copy without out-of-registration colors.

❑ Procedures

* The service technician must perform the adjustment in accordance with the procedure below.

(1) Make sure that no out-of-registration colors are visible on an original.

(2) Check the direction in which colors are misaligned.

* This adjustment is intended to correct misaligned colors due to differences between the paper feeding speed and rotating speed of the transfer belt. Therefore, it will be effective, only if colors are misaligned in the paper feeding direction (or the secondary scanning direction). This adjustment cannot improve misaligned colors in the direction perpendicular to paper feeding (or primary scanning) or in the secondary scanning direction periodically (partially at regular intervals). Refer to "5.2 Troubleshooting for the Image 1) Color deviation" in the Service Handbook.

(3) Enter adjustment mode [05] and print out the test print pattern to correct out-of-registration colors.

(a) Enter adjustment mode [05]. Select code [4719]. Press the [START] button.

• Registration control will be forcibly performed.

(b) Enter code [104] corresponding to a desired test print pattern. Press the [FAX] button.

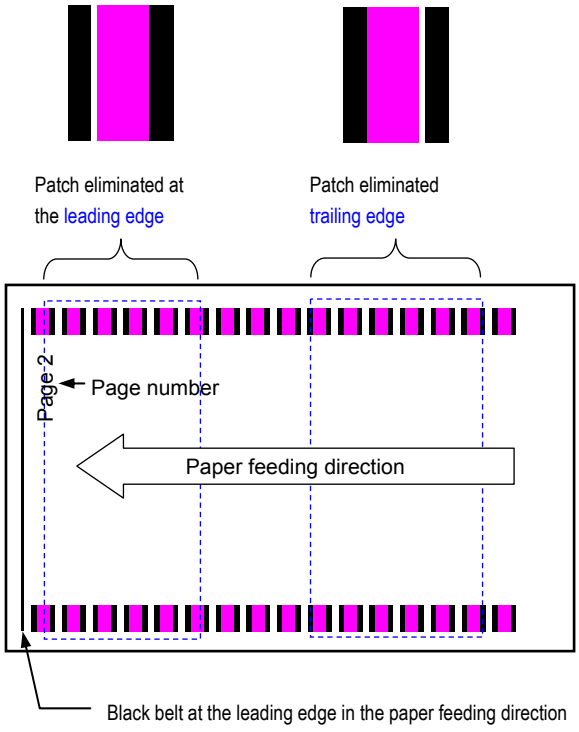
• Paper is fed from the drawer to print out a test print pattern.

Code	Test print pattern	Paper size	No. of copies
104	Test print pattern for identifying out-of-registration colors	A3/LD	2

* Jot down the "paper feeding direction" on the printed test print pattern beforehand. This facilitates identifying out-of-registration colors in the subsequent adjustment. Use only the second page of the test print pattern.

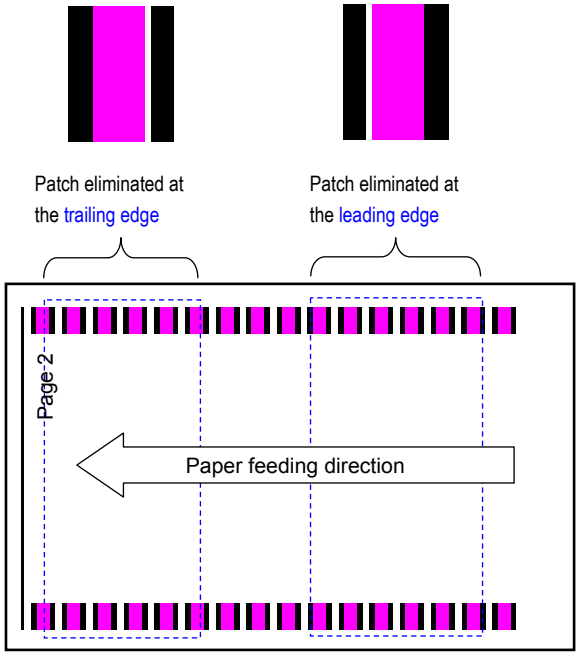
(4) Check the second page of the printed test print pattern to identify a pattern for the out-of-registration colors.
* There are 2 patterns for the out-of-registration colors. Check which pattern the out-of-registration colors to adjust on the body are included.

Pattern A for out-of-registration colors


Patch eliminated at the leading edge
Patch eliminated trailing edge
Page 2
Page number
Paper feeding direction
Black belt at the leading edge in the paper feeding direction

Paper feeding speed **slower than** transfer belt rotating speed

Pattern B for out-of-registration colors



Paper feeding speed **faster than** transfer belt rotating speed

(5) Finely adjust the rotating speed of the registration motor, in accordance with a pattern for the out-of-registration colors.

• Use steps (a) to (b) to perform the adjustment.

(a) Enter adjustment mode [05]. Select code [483]. Finely adjust the rotating speed of the registration motor.

• Adjust the values in accordance with a pattern for the out-of-registration colors as shown in the table below.

Pattern for out-of-registration colors	[05] code	Subcode	Recommended value	Acceptable value range	Default
Pattern A	05-483	0	123 to 127 (Set a value smaller than 128)	0 to 255	128
Pattern B			129 to 132 (Set a value larger than 128)		

(b) After performing registration control, print out the test print pattern to check whether the misaligned colors have been improved.

* For further information regarding the adjustment procedures, refer to procedures (3) and (4).

* Repeatedly use procedures (3) to (5) as necessary, to select a proper value.

<Hint> When subcode "0" is adjusted for code 05-483, the correlation between the paper feeding speed and rotating speed of the transfer belt will be corrected in every paper mode. However, when colors are misaligned on an image printed in the thick paper mode after the adjustment for subcode "0", adjust subcode "3" (during deceleration in the thick paper mode).

* For subcode "3," use the steps and recommended values for subcode "0."
* Paper for printing a test print pattern will only be fed from the drawer. Load the desired number of sheets of thick paper in the drawer, in order to print the test print pattern on thick paper.
* Adjust subcode "0" and then subcode "3," in order to adjust only misaligned colors in the thick paper mode.

❑ Precautions after the completion of the adjustment

Nothing in particular.

❑ Remarks

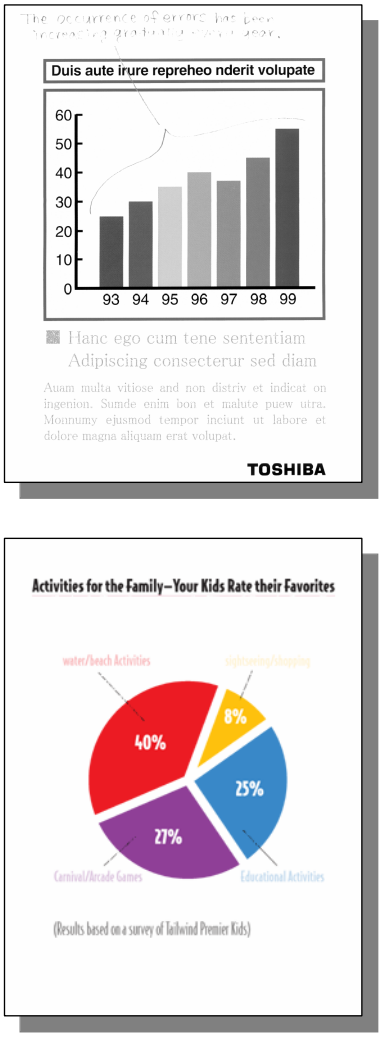
• Enter a value within the recommended value range mentioned in the procedures. Otherwise, it may cause a loss in MFP performance, including degradation in the image quality.

•Out-of-registration colors cannot always be perfectly corrected; this depends on the type of text or lines to print.

• Also, refer to the relevant information in the Service Handbook for further information regarding color registration control procedures.

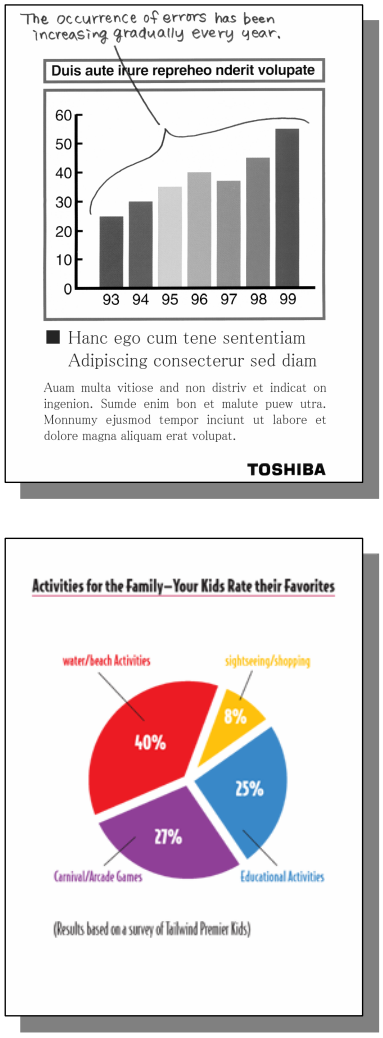
2.1 To Copy Text Clearly (To eliminate faint, smudged or blurred text)

Before the adjustment



When a light print image is copied, the text looks blurred.

After the adjustment


The occurrence of errors has been increasing gradually every year.
Duis aute irure repreheo nderit volupate
60
50
40
30
20
10
0
93 94 95 96 97 98 99
Hanc ego cum tene sententiam
Adipiscing consecterur sed diam
Auam multa vitiose and non distriv et indicat on ingenion. Sumde enim bon et malute puew utra. Monnumy ejusmod tempor inciunt ut labore et dolore magna aliquam erat volupat.
TOSHIBA
Activities for the Family–Your Kids Rate their Favorites
water/beach Activities
sightseeing/shopping
40%
8%
25%
27%
Carnival/Arcade Games
Educational Activities
(Results based on a survey of Tailwind Premier Kids)

The graphic image and text look darker and sharper.

❑ Explanation

Perform image processing, in order to obtain a sharp and dark copy image when copying an original containing light text and graphic images, or a light copy image when copying an original containing a highly colored text and copy image.

❑ Procedures

* The procedure to use varies, depending on whether to adjust the copy image quality in the Black mode, Full color mode or Auto color mode. Refer to the procedure corresponding to the particular user's request.

* Refer to the procedure to adjust the copy image quality in the Full color mode with the Printed image mode selected, in order to adjust the copy image quality in the Black mode with the Photo mode selected. The values are shared in the Black mode with the Photo mode selected and in the Full Color Mode with the Printed image mode selected. Therefore, adjusting the copy image quality in either of the modes affects the one in the other mode.

2.1.1 To Adjust the Copy Image Quality in the Black Mode

* You can start with any of the procedures. But it is recommended to perform the procedures in order, as listed below. You can use one procedure in conjunction with another. But if this changes the image quality more than required or loses the effectiveness of the adjustment, restore the settings made in the previously used procedure to the original ones. Then use other procedures.
* Both the service technician and the user can use procedures (1), (2) and (4).
* Only the service technician must use procedures (3), (5), (6) and (7).

(1) Press the [BASIC] button on the Control Panel. Press the [◗] button to increase the copy density.

After increasing the copy density, copy and check the copy image quality.
With the copy density set to the maximum, if further image quality adjustments are still necessary, use the next procedure.

(2) Press the [IMAGE] button on the Control Panel. Press the [SHARPNESS] button.
Press the [SHARP] button to increase the sharpness intensity.

After increasing the sharpness intensity, copy and check the copy image quality.
With the sharpness intensity set to the maximum, if further image quality adjustments are still necessary, the service technician must use the following procedures.

(3) Enter adjustment mode [05]. Increase the values for codes [604/605] to strengthen the copy density of text (or increase the sharpness intensity).

• The code to use varies according to the original mode (Text/Photo or Text). Adjust the value for [05] code corresponding to the original mode in which you would like to improve the image quality and set values larger than "128" for codes 05-604/605.

Original mode	[05] code	Recommended value	Acceptable value range	Default
Text/Photo	05-604	Set a value larger than 128.	0 to 255	128
Text	05-605			

* Setting "0" provides the softest image, while setting "255" provides the sharpest image.
Changing the values for these codes will change the sharpness intensity, when the "Sharpness" indicator in the "IMAGE" menu is set to the center. Remember that 1 step of the indicator will increase or decrease the sharpness intensity by 25. If the sharpness intensity of the center value is changed, each step of the indicator will be changed accordingly. (For instance, if the center value is increased by 25 (sharper), the value of each step of the indicator will also be increased by 25 (sharper).)

After increasing the sharpness intensity, copy and check the copy image quality.
If further image quality adjustments are still necessary, use the next procedure.

(4) Press the [BASIC] button on the Control Panel. Select "TEXT" from among the original mode options.

* To have "TEXT" selected from among the original mode options by default, refer to procedure (1) in 2.8 To Eliminate Moiré.

After selecting the Text mode, copy and check the copy image quality.
If further image quality adjustments are still necessary, use the next procedure.

(5) Enter adjustment mode [05]. Decrease the values for codes [648/649] to increase the copy density of text. (To improve faint, smudged text or thin lines)

Original mode	[05] code	Recommended value	Acceptable value range	Default
Text/Photo	05-648	Set a value smaller than 2.	0 to 4	2
Text	05-649			

* Set the value in increments of approximately 1, while checking the copy image until the optimum value is obtained.

After increasing the copy density, copy and check the copy image quality.
If further image quality adjustments are still necessary, use the next procedure.

(6) Enter adjustment mode [05]. Change the values for codes [590/591] to adjust the gamma curve balance of the medium- and high-density areas.

Original mode	[05] code	Subcode	Recommended value	Acceptable value range	Default
Text/Photo	05-590	1/2	Set a value larger than 128.	0 to 255	128
Text	05-591	1/2			

* Set the value in increments of approximately 20, while checking the copy image until the optimum value is obtained.
(Please be careful because the gradation (or density) of the medium-density area may exceed that of the high-density area, depending on the set value.)

* The subcode varies according to the area where the density is adjusted. Refer to the table below and set the subcode for the area to be adjusted. The density of light text or a graphic image will vary, if the medium- or high-density area is mainly adjusted. Setting "0" for the subcode allows you to adjust the low-density area. But it will not affect the light text or graphic images. Therefore, never change the value for the low-density area.

Subcode	Area where the density is adjusted
1	Medium-density area
2	High-density area

After adjusting the gamma curve balance, copy and check the copy image quality.
If further image quality adjustments are still necessary, use the next procedure.

(7) Enter adjustment mode [05]. Change the values for codes [570/572] or [693/695] to set the background peak of range correction to "fixed" in the manual copy density mode.

• The code to use varies according to the density option (auto or manual), original mode, (Text/Photo, Photo or Text) and use of the RADF (MR-3018). Adjust the value for [05] code corresponding to the condition for which you would like to improve the image quality and set "1" in the ten's place.

*Set value (Ex.: To set the background/text peak in the manual and auto copy density mode to "fixed")

1 1

One's place: Set the background/text peak in auto copy density mode to "fixed" — See the table below for further information.

Ten's place: Set the background/text peak in manual copy density mode to "fixed" — See the table below for further information.

Value	Background peak	Text peak
1	Fixed	Fixed
2	Varied	Fixed
3	Fixed	Varied
4	Varied	Varied

*Change the value only for the manual copy density mode (ten's place). Never change the value for the auto copy density mode (one's place).

To scan an original placed manually on the original glass

Original mode	[05] code	Copy density mode	Recommended value		Default	
			Ten's place	One's place	Ten's place	One's place
Text/Photo	05-570	Manual	1	Current value	2	2
Text	05-572	Manual	1	Current value	2	2

To scan an original fed from the RADF

Original mode	[05] code	Copy density mode	Recommended value		Default	
			Ten's place	One's place	Ten's place	One's place
Text/Photo	05-693	Manual	1	Current value	2	2
Text	05-695	Manual	1	Current value	2	2

❑ Precautions after the completion of the adjustment

The adjustment may possibly cause an increase in the amount of toner used, moiré, blurred text (small, dark text blurred), diminished photo images or gradational images (less accurate reproducibility of halftones). Therefore, carefully perform the adjustment, while checking the copy image.

❑ Remarks

Enter a value within the recommended value range mentioned in the procedures. Otherwise, it may cause a loss in MFP performance, including degradation in the image quality and a reduction in the life of the consumables.

2.1.2 To Adjust the Copy Image Quality in the Full Color Mode

* You can start with any of the procedures. But it is recommended to perform the procedures in order, as listed below. You can use one procedure in conjunction with another. But if this changes the image quality more than required or loses the effectiveness of the adjustment, restore the settings made in the previously used procedure to the original ones. Then use other procedures.
* Both the service technician and the user can use procedures (1), (2) and (5).
* Only the service technician must use procedures (3) and (4).

(1) Press the [BASIC] button on the Control Panel. Press the [◗] button to increase the copy density.

After increasing the copy density, copy and check the copy image quality.
With the copy density set to the maximum, if further image quality adjustments are still necessary, use the next procedure.

(2) Press the [IMAGE] button on the Control Panel. Press the [SHARPNESS] button.
Press the [SHARP] button to increase the sharpness intensity.

After increasing the sharpness intensity, copy and check the copy image quality.
With the sharpness intensity set to the maximum, if further image quality adjustments are still necessary, the service technician must use the following procedures.

(3) Enter adjustment mode [05]. Increase the values for codes [1737 to 1741] to strengthen the copy density of text (or increase the sharpness intensity).

• The code to use varies according to the original mode (Text/Photo, Text, Printed image, Photo or Map). Adjust the value for [05] code corresponding to the original mode in which you would like to improve the image quality and set values larger than "128" for codes 05-1737 to 1741.

Original mode	[05] code	Recommended value	Acceptable value range	Default
Text/Photo	05-1737	Set a value larger than 128.	0 to 255	128
Text	05-1738			
Printed image	05-1739			
Photo	05-1740			
Map	05-1741			

* Setting "0" provides the softest image, while setting "255" provides the sharpest image.
Changing the values for these codes will change the sharpness intensity, when the "Sharpness" indicator in the "IMAGE" menu is set to the center. Remember that 1 step of the indicator will increase or decrease the sharpness intensity by 25. If the sharpness intensity of the center value is changed, each step of the indicator will be changed accordingly. (For instance, if the center value is increased by 25 (sharper), the value of each step of the indicator will also be increased by 25 (sharper).)

* The values adjusted for the sharpness intensity are shared in the Full color mode with the Printed image mode selected and in the Black mode with the Photo mode selected. Therefore, adjusting the copy image quality in either of the modes affects that in the other mode. Perform copy image quality adjustment in the mode that is used for the adjustment, while checking the one in the other mode.

After increasing the sharpness intensity, copy and check the copy image quality.
If further image quality adjustments are still necessary, use the next procedure.

(4) Enter adjustment mode [05]. Change the values for codes [1630 to 1633] to adjust the maximum color density of the text.

Color to adjust	[05] code	Recommended value	Acceptable value range	Default
Y (Yellow)	05-1630	Set a value larger than 5 to increase the density. Set a value smaller than 5 to decrease the density.	0 to 10	5
M (Magenta)	05-1631			
C (Cyan)	05-1632			
K (Black)	05-1633			

* Set the value in increments of 1, while checking the copy image until the optimum value is obtained.

* This adjustment will be effective, only if the "TEXT/PHOTO" or "TEXT" mode is selected from among the original mode options. If the "TEXT/PHOTO" mode is selected, the adjustment will affect only text (or an area which is recognized as text).

After adjusting the maximum color density of the text, copy and check the copy image quality.
If further image quality adjustments are still necessary, use the next procedure.

(5) Press the [BASIC] button on the Control Panel. Select "TEXT" from among the original mode options.
* To have "TEXT" selected from among the original mode options by default, refer to procedure (1) in 2.8 To Eliminate Moiré.

❑ Precautions after the completion of the adjustment

The adjustment may possibly cause an increase in the amount of toner used, moiré, blurred text (small, dark text blurred), diminished photo images or gradational images (less accurate reproducibility of halftones), and noise around the text on the copy. Therefore, carefully perform the adjustment, while checking the copy image.

❑ Remarks

Enter a value within the recommended value range mentioned in the procedures. Otherwise, it may cause a loss in MFP performance, including degradation in the image quality and a reduction in the life of the consumables.

2.1.3 To Adjust the Copy Image Quality in the Auto Color Mode

* You can start with any of the procedures. But it is recommended to perform the procedures in order, as listed below. You can use one procedure in conjunction with another. But if this changes the image quality more than required or loses the effectiveness of the adjustment, restore the settings made in the previously used procedure to the original ones. Then use other procedures.
* Both the service technician and the user can use procedures (1) and (2).
* Only the service technician must use procedure (3).

(1) Press the [BASIC] button on the Control Panel. Press the [◗] button to increase the copy density.

After increasing the copy density, copy and check the copy image quality.
With the copy density set to the maximum, if further image quality adjustments are still necessary, use the next procedure.

(2) Press the [IMAGE] button on the Control Panel. Press the [SHARPNESS] button.
Press the [SHARP] button to increase the sharpness intensity.

After increasing the sharpness intensity, copy and check the copy image quality.
With the sharpness intensity set to the maximum, if further image quality adjustments are still necessary, the service technician must use the following procedure.

(3) Enter adjustment mode [05]. Increase the value for code [1757] to strengthen the copy density of text (or increase the sharpness intensity).

• The sharpness intensity can be adjusted only when the "TEXT/PHOTO" mode is selected from among the Auto Color original mode options in adjustment mode [05]. Set a value larger than "128" for code 05-1757.

Original mode	[05] code	Recommended value	Acceptable value range	Default
Text/Photo	05-1757	Set a value larger than 128.	0 to 255	128

* Setting "0" provides the softest image, while setting "255" provides the sharpest image.
Changing the value for this code will change the sharpness intensity, when the "Sharpness" indicator in the "IMAGE" menu is set to the center. Remember that 1 step of the indicator will increase or decrease the sharpness intensity by 25. If the sharpness intensity of the center value is changed, each step of the indicator will be changed accordingly. (For instance, if the center value is increased by 25 (sharper), the value of each step of the indicator will also be increased by 25 (sharper).)

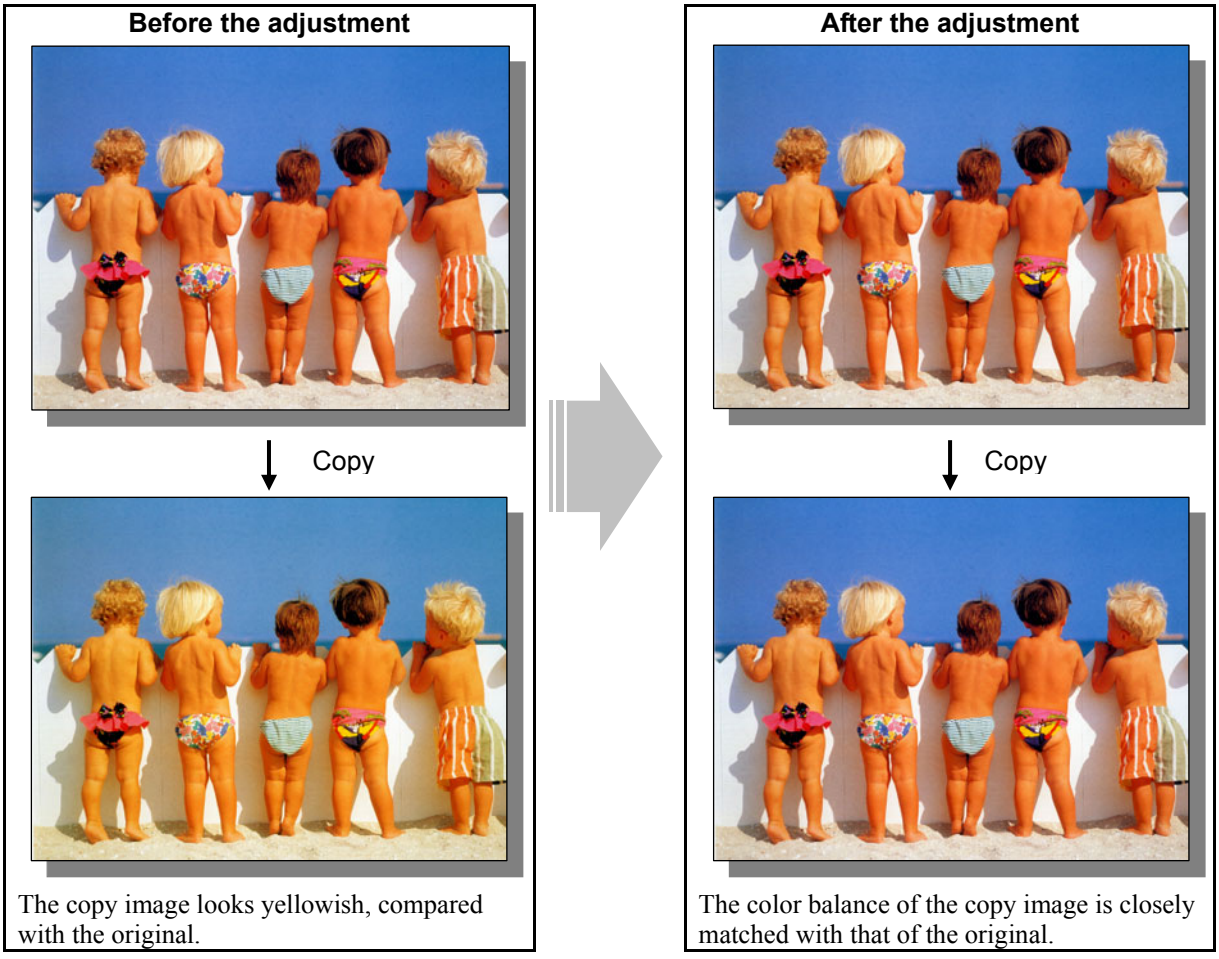
❑ Precautions after the completion of the adjustment

The adjustment may possibly cause an increase in the amount of toner used, moiré, blurred text (small, dark text blurred), diminished photo images or gradational images (less accurate reproducibility of halftones). Therefore, carefully perform the adjustment, while checking the copy image.

❑ Remarks

Enter a value within the recommended value range mentioned in the procedures. Otherwise, it may cause a loss in MFP performance, including degradation in the image quality and a reduction in the life of the consumables.

2.2 To Closely Match the Color Balance of the Original


Before the adjustment
Copy
The copy image looks yellowish, compared with the original.
After the adjustment
Copy
The color balance of the copy image is closely matched with that of the original.

❑ Explanation

Depending on the color balance of the original, the copy image sometimes looks different from the original. Perform image quality control, automatic calibration, color adjustment (color balance adjustment or RGB adjustment) and the color density adjustment, in order to match the color balance of the copy image with that of the original.

❑ Procedures

* You can start with any of the procedures. But it is recommended to perform the procedures in order, as listed below. You can use one procedure in conjunction with another. But if this changes the image quality more than required or loses the effectiveness of the adjustment, restore the settings made in the previously used procedure to the original ones. Then use other procedures.
* Only the service technician must use procedures (1) and (5).
* Both the service technician and the user can use procedures (2) to (4).
*Procedure (3) "Hue adjustment" cannot be selected concurrently with procedure (4) "Color balance/RGB adjustments." Performing either of the adjustments and then another adjustment clears what has been previously adjusted. For example, using procedure (3) and then procedure (4) clears the adjusted hue using procedure (3).

(1) Enter adjustment mode [05]. Select code [396]. Press the [START] button.

• Image quality control will be forcibly performed to correct the color balance and copy density.

After exercising image quality control, use procedure (2).

(2) Perform automatic calibration to correct variations in the copy density.

*[ADMIN] is selected from among the [CALIBRATION DISPLAY LEVEL] options by default. In other words, an administrator is authorized to operate automatic calibration. But the [USER] option can also be selected to allow the user to operate it. Refer to the User Functions Guide for further information regarding how to select the [CALIBRATION DISPLAY LEVEL] option.

• Use steps (a) through (i) to perform automatic calibration.

(a) Press the [USER FUNCTIONS] button on the Control Panel to enter the "User Functions" menu.
(b) Press the [ADMIN] button.
(c) Enter an administrator password of 6 to 10 digits. Press the [ENTER] button.
(d) Press the [GENERAL] button.
(e) Press the [CALIBRATION] button.
(f) Press the [COPY] button.
(g) Press the [CALIBRATION] button to print out the test chart.
(h) Place the printed test chart on the original glass.
(i) Press the [START] button to perform calibration. When the calibration comes to an end, the message "Scanning and calibrating" will disappear.

* As a result of the above steps, the copy image quality will be corrected in the Full color mode and the Black and White mode simultaneously.

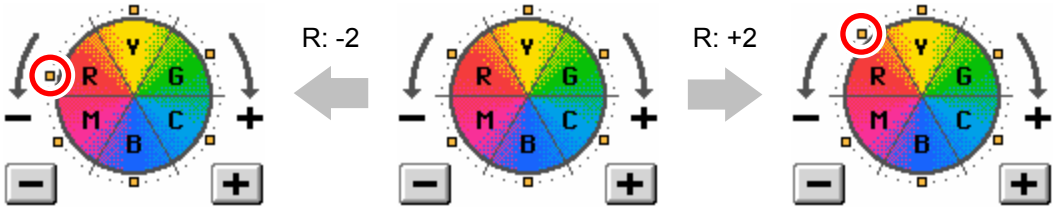
After performing automatic calibration, copy and check the copy image quality.
If further image quality adjustments are still necessary, use the next procedure.

(3) Perform hue adjustment to adjust the tint of the color in the color area to change.

• Use steps (a) through (d) to perform the adjustment.

(a) Press the [IMAGE] button on the Control Panel.
(b) Press [HUE] button.
(c) Press the [+] or [-] button on the indicator of the color to adjust.

*Pressing the [+] or [-] button on the indicator changes the hue as shown below.
(For instance, press the [+] button at R (Red). Then the tint of R (Red) is closely matched with that of Y (Yellow).
Press the [-] button at R (Red). Then the tint of R (Red) will be closely matched with that of M (Magenta).



(d) Enter the [ENTER] button.

After adjusting the hue, copy and check the copy image quality.
If further image quality adjustments are still necessary, use the next procedure.

(4) Perform color balance adjustment or RGB adjustment to adjust the tint of colors in general.

• Use steps (a) through (d) to perform the adjustment.

(a) Press the [IMAGE] button on the Control Panel.

(b) Press the [COLOR BALANCE] button to adjust the color balance by changing the amount of toner (C, M, Y and K) or the [RGB ADJUSTMENT] button to adjust the color balance by changing the intensity of R, G and B.

(c) Press the [+] button to enhance the tint of the color or the [-] button to decrease it.

* After selecting the color balance by changing the amount of toner (C, M, Y and K), press the [DETAIL] button. The tint of the color can be adjusted according to density area (low-, medium- or high-density area).

(d) Press the [ENTER] button.

After adjusting the tint of the colors, copy and check the copy image quality.
If further image quality adjustments are still necessary, use the next procedure.

(5) Enter adjustment mode [05]. Change the values for codes [1779 to 1798] to adjust the color density.

Color to adjust	Original mode	[05] code	Subcode	Recommended value	Acceptable value range	Default
Y (Yellow)	Text/Photo	05-1779	0/1/2	Set a value larger than 128 to increase the density. Set a value smaller than 128 to decrease the density.	0 to 255	128
	Text	05-1780	0/1/2			
	Printed image	05-1781	0/1/2			
	Photo	05-1782	0/1/2			
	Map	05-1783	0/1/2			
M (Magenta)	Text/Photo	05-1784	0/1/2			
	Text	05-1785	0/1/2			
	Printed image	05-1786	0/1/2			
	Photo	05-1787	0/1/2			
	Map	05-1788	0/1/2			
C (Cyan)	Text/Photo	05-1789	0/1/2			
	Text	05-1790	0/1/2			
	Printed image	05-1791	0/1/2			
	Photo	05-1792	0/1/2			
	Map	05-1793	0/1/2			
K (Black)	Text/Photo	05-1794	0/1/2			
	Text	05-1795	0/1/2			
	Printed image	05-1796	0/1/2			
	Photo	05-1797	0/1/2			
	Map	05-1798	0/1/2			

* Set the value in increments of approximately 10, while checking the copy image until the optimum value is obtained.

* The value for the code corresponding to the original mode (Text/Photo, Text, or Printed image) will affect the copy image quality in the Full color mode and the Auto color mode.

* The subcode varies according to the area where the density is adjusted. Refer to the table below and set the subcode for the area to be adjusted.

Subcode	Area where the density is adjusted
0	Low-density area
1	Medium-density area
2	High-density area

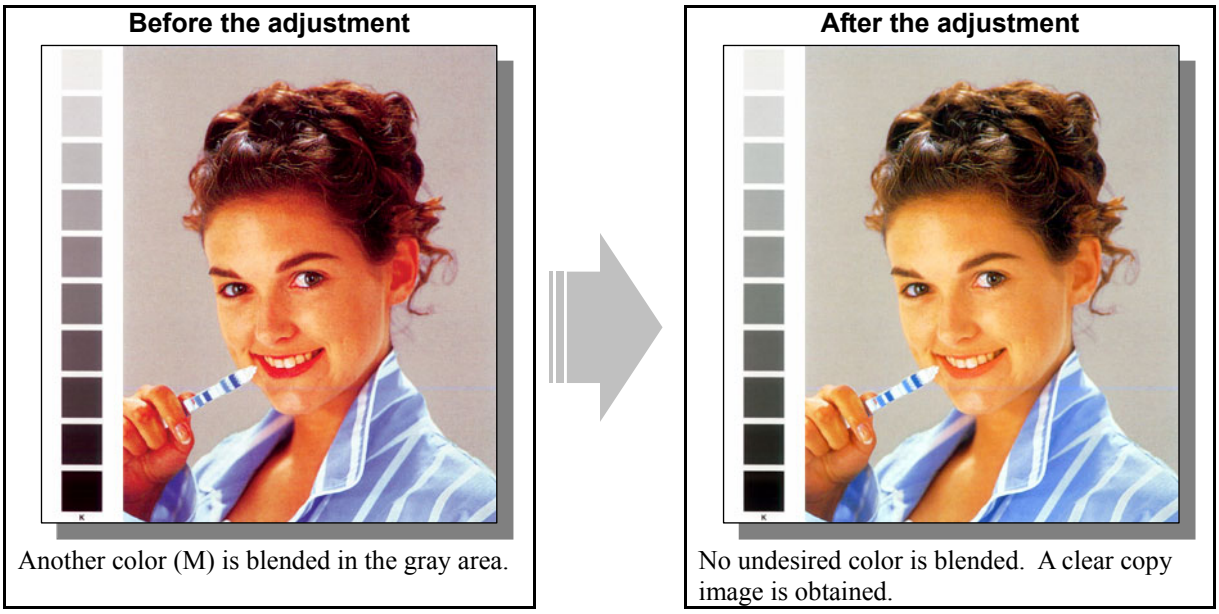
❑ Precautions after the completion of the adjustment

The adjustment may possibly cause offset failure, particularly when the highly colored original is copied in the Photo mode. Therefore, carefully perform the adjustment, while checking the copy image.

❑ Remarks

Enter a value within the recommended value range mentioned in the procedures. Otherwise, it may cause a loss in MFP performance, including degradation in the image quality and a reduction in the life of the consumables.

2.3 To Improve the Reproducibility of Gray



Another color (M) is blended in the gray area.

No undesired color is blended. A clear copy image is obtained.

❑ Explanation

When an original containing gray is copied, another color may be blended in the gray area. Perform image quality control, automatic calibration, color adjustment (color balance adjustment or RGB adjustment) and color density adjustment, in order to avoid this problem (or to obtain an achromatic color, for instance).

❑ Procedures

* You can start with any of the procedures. But it is recommended to perform the procedures in order, as listed below. You can use one procedure in conjunction with another. But if this changes the image quality more than required or loses the effectiveness of the adjustment, restore the settings made in the previously used procedure to the original ones. Then use other procedures.
* Only the service technician must use procedures (1) and (4).
* Both the service technician and the user can use procedures (2) and (3).

(1) Enter adjustment mode [05]. Select code [396]. Press the [START] button.

• Image quality control will be forcibly performed to correct the color balance and copy density.

After exercising image quality control, copy and check the copy image quality.
If further image quality adjustments are still necessary, use the next procedure.

(2) Perform automatic calibration to correct variations in the copy density.

* For further information regarding the adjustment procedures, refer to procedure (2) in 2.2 To Closely Match the Color Balance of the Original.

* [ADMIN] is selected from among the [CALIBRATION DISPLAY LEVEL] options by default. In other words, an administrator is authorized to operate automatic calibration. But the [USER] option can also be selected to allow the user to operate it. Refer to the User Functions Guide for further information regarding how to select the [CALIBRATION DISPLAY LEVEL] option.

After performing automatic calibration, copy and check the copy image quality.
If further image quality adjustments are still necessary, use the next procedure.

(3) Perform color balance adjustment or RGB adjustment to adjust the tint of colors in general.

* For further information regarding the adjustment procedures, refer to procedure (4) in 2.2 To Closely Match the Color Balance of the Original.

After adjusting the tint of colors, copy and check the copy image quality.
If further image quality adjustments are still necessary, use the next procedure.

(4) Enter adjustment mode [05]. Change the values for codes [1779 to 1798] to adjust the color density.

Color to adjust	Original mode	[05] code	Subcode	Recommended value	Acceptable value range	Default
Y (Yellow)	Text/Photo	05-1779	0/1/2	Set a value larger than 128 to increase the density. Set a value smaller than 128 to decrease the density.	0 to 255	128
	Text	05-1780	0/1/2			
	Printed image	05-1781	0/1/2			
	Photo	05-1782	0/1/2			
	Map	05-1783	0/1/2			
M (Magenta)	Text/Photo	05-1784	0/1/2			
	Text	05-1785	0/1/2			
	Printed image	05-1786	0/1/2			
	Photo	05-1787	0/1/2			
	Map	05-1788	0/1/2			
C (Cyan)	Text/Photo	05-1789	0/1/2			
	Text	05-1790	0/1/2			
	Printed image	05-1791	0/1/2			
	Photo	05-1792	0/1/2			
	Map	05-1793	0/1/2			
K (Black)	Text/Photo	05-1794	0/1/2			
	Text	05-1795	0/1/2			
	Printed image	05-1796	0/1/2			
	Photo	05-1797	0/1/2			
	Map	05-1798	0/1/2			

* Set the value in increments of approximately 10, while checking the copy image until the optimum value is obtained.

* The value for the code corresponding to the original mode (Text/Photo, Text, or Printed image) will affect the copy image quality in the Full color mode and the Auto color mode.

* The subcode varies according to the area where the density is adjusted. Refer to the table below and set the subcode for the area to be adjusted.

Subcode	Area where the density is adjusted
0	Low-density area
1	Medium-density area
2	High-density area

❑ Precautions after the completion of the adjustment

The adjustment may possibly cause offset failure, particularly when a highly colored original is copied in the Photo mode. Also, it may cause degradation in the color reproducibility. (Excessively enhancing the tint of black makes other colors, such as skin tones, look dull.) Therefore, carefully perform the adjustment, while checking the copy image.

❑ Remarks

Enter a value within the recommended value range mentioned in the procedures. Otherwise, it may cause a loss in MFP performance, including degradation in the image quality and a reduction in the life of the consumables.

2.4 To Copy in Vivid Colors

Before the adjustment

When a copy is made without any adjustments, the vividness is insufficient on the copy image.

After the adjustment

The copy image is obtained in vivid colors.

❑ Explanation

When a copy is made without any adjustments, the vividness may be insufficient on the copy image. Perform saturation adjustment, color adjustment (color balance adjustment or RGB adjustment), and color density adjustment, in order to obtain a copy image in vivid colors.

❑ Procedures

* You can start with any of the procedures other than (5). But it is recommended to perform the procedures in order, as listed below. You can use one procedure in conjunction with another. But if this changes the image quality more than required or loses the effectiveness of the adjustment, restore the settings made in the previously used procedure to the original ones. Then use other procedures.
* Both the service technician and the user can use procedures (1) to (3).
* Only the service technician must use procedure (4).
* Only if the vividness of R (Red) is still insufficient even after procedures (1) to (4) have been used, the service technician must use procedure (5).

(1) Press the [IMAGE] button on the Control Panel. Press the [ONE TOUCH ADJUSTMENT] button.
Press the [VIVID] button.

After selecting the "Vivid" option, copy and check the copy image quality.
When the copy image quality with the "Vivid" option is insufficient, cancel the "Vivid" option and use the next procedure.
(The one-touch adjustment can be canceled by pressing the [ONE TOUCH ADJUSTMENT] button again.)

(2) Perform saturation adjustment to adjust the overall saturation.

• Use steps (a) through (d) to perform the adjustment.

(a) Press the [IMAGE] button on the Control Panel.
(b) Press the [SATURATION] button.
(c) Press the [+] button to increase the saturation of the copy image.
(d) Press the [ENTER] button.

After adjusting the saturation, copy and check the copy image quality.
If further image quality adjustments are still necessary, use the next procedure.

(3) Perform color balance adjustment or RGB adjustment to adjust the tint of colors in general.

* For further information regarding the adjustment procedures, refer to procedure (4) in 2.2 To Closely Match the Color Balance of the Original.

<Note> When you use procedure (2) "Saturation adjustment" in conjunction with (3) "Color balance/RGB adjustments," the following restrictions are imposed:

- Combination of saturation adjustment + color balance adjustment: Valid
- Combination of saturation adjustment + RGB adjustment: Invalid

After adjusting the tint of colors, copy and check the copy image quality.
If further image quality adjustments are still necessary, the service technician must use the next procedure.

(4) Enter adjustment mode [05]. Change the values for codes [1779 to 1798] to adjust the color density.

Color to adjust	Original mode	[05] code	Subcode	Recommended value	Acceptable value range	Default
Y (Yellow)	Text/Photo	05-1779	0/1/2	Set a value larger than 128 to increase the density. Set a value smaller than 128 to decrease the density.	0 to 255	128
	Text	05-1780	0/1/2			
	Printed image	05-1781	0/1/2			
	Photo	05-1782	0/1/2			
	Map	05-1783	0/1/2			
M (Magenta)	Text/Photo	05-1784	0/1/2			
	Text	05-1785	0/1/2			
	Printed image	05-1786	0/1/2			
	Photo	05-1787	0/1/2			
	Map	05-1788	0/1/2			
C (Cyan)	Text/Photo	05-1789	0/1/2			
	Text	05-1790	0/1/2			
	Printed image	05-1791	0/1/2			
	Photo	05-1792	0/1/2			
	Map	05-1793	0/1/2			
K (Black)	Text/Photo	05-1794	0/1/2			
	Text	05-1795	0/1/2			
	Printed image	05-1796	0/1/2			
	Photo	05-1797	0/1/2			
	Map	05-1798	0/1/2			

* Set the value in increments of approximately 10, while checking the copy image until the optimum value is obtained.

* The value for the code corresponding to the original mode (Text/Photo, Text, or Printed image) will affect the copy image quality in the Full color mode and the Auto color mode.

* The subcode varies according to the area where the density is adjusted. Refer to the table below and set the subcode for the area to be adjusted.

Subcode	Area where the density is adjusted
0	Low-density area
1	Medium-density area
2	High-density area

After setting the values, copy and check the copy image quality.
Only if the vividness of R (Red) is still insufficient even after all the above procedures have been used, must the service technician use the next procedure.

(5) Enter adjustment mode [05]. Change the value for code [2905] to adjust the transfer (1st transfer) roller bias output.
(Adjust the offset voltage of transfer roller bias for C (Cyan) and K (Black) so as to increase the density of R (Red).)

• The code to use varies according to the paper type and color to adjust. Adjust the value for the subcode corresponding to the color for which you would like to improve the image quality. Set the value within a range of "2" to "5" to obtain the highest density of R (Red).

Paper type	Color to adjust	[05] code	Subcode	Recommended value	Acceptable value range	Default
Plain paper	C (Cyan)	05-2905	2	2 to 5	0 to 10	5
	K (Black)		3			
Thick	C (Cyan)		8			
	K (Black)		9			

*Never change the values for subcodes other than the above. Otherwise, it may cause a loss in MFP performance, including degradation in the image quality.

<Note>
- The adjustment may possibly decrease the density of G (Green), B (Blue) and K (Black) extremely. Therefore, carefully perform the adjustment, while checking the copy image.
- Unless this adjustment changes the density of R (Red), return the values to the default (set value: 5).
- This adjustment may affect not only the copy image but also every image quality such as the printout. Therefore, perform the adjustment, being aware that the image quality of all future printouts will be changed, when printing out originals other than the one that is used for the adjustment.

❑ Precautions after the completion of the adjustment

The adjustment may possibly cause offset failure, particularly when the highly colored original is copied in the Photo mode. Therefore, carefully perform the adjustment, while checking the copy image.

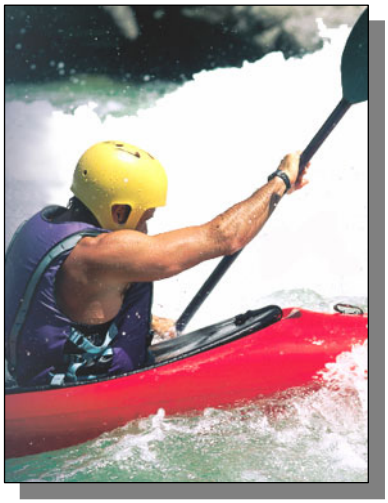
❑ Remarks

Enter a value within the recommended value range mentioned in the procedures. Otherwise, it may cause a loss in MFP performance, including degradation in the image quality and a reduction in the life of the consumables.

2.5 To Make the Pale Area of the Original Look Darker and Sharper

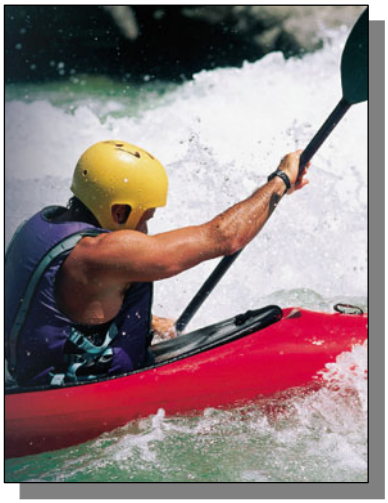
(To improve the highlight reproducibility)

Before the adjustment



The splashing area (highlight) is blurred.

After the adjustment



A clear copy image of the splashing area is obtained.

❑ Explanation

Perform the copy density adjustment and background adjustment, in order to make the pale area (highlight) of the original look darker and sharper on the copy.

❑ Procedures

* You can start with any of the procedures. But it is recommended to perform the procedures in order, as listed below. You can use one procedure in conjunction with another. But if this changes the image quality more than required or loses the effectiveness of the adjustment, restore the settings made in the previously used procedure to the original ones. Then use other procedures.
* Both the service technician and the user can use procedures (1) and (3).
* Only the service technician must use procedures (2) and (4).

(1) Press the [IMAGE] button on the Control Panel. Press the [BACKGROUND ADJUSTMENT] button. Press the [DARK] button to darken the background.

After increasing the background density, copy and check the copy image quality.
With the background density set to the maximum, if further image quality adjustments are still necessary, the service technician must use the next procedure.

(2) Enter adjustment mode [05]. Change the values for codes [1688 to 1692] and [1698 to 1702] to adjust the background density.

* The highlighted area will become highly visible, if the background density is increased.

Adjustment	Original mode	[05] code	Recommended value	Acceptable value range	Default
Automatic offsetting adjustment for background processing	Text/Photo	05-1688	Set a value larger than 128 to increase the density.	0 to 255	128
	Text	05-1689			
	Printed image	05-1690			
	Photo	05-1691			
	Map	05-1692			
Manual offsetting adjustment for background processing	Text/Photo	05-1698			
	Text	05-1699			
	Printed image	05-1700			
	Photo	05-1701			
	Map	05-1702			

* The value for automatic offsetting adjustment for background processing will be applied, only if the automatic copy density mode is selected. On the other hand, the value for manual offsetting adjustment for background processing will be applied, only if the manual copy density mode is selected.

* Set the value in increments of approximately 10, while checking the copy image until the optimum value is obtained.

* The value for the code corresponding to the original mode (Text/Photo, Text, or Printed image) will affect the copy image quality in the Full color mode and the Auto color mode.

* The value adjusted for the background density is shared in the Full color mode with the Printed image mode selected and in the Black mode with the Photo mode selected. Therefore, adjusting the copy image quality in either of the modes affects that in the other mode. Perform copy image quality adjustment in the mode that is used for the adjustment, while checking that in the other mode.

<Note> "Making the highlighted area more visible (or increasing the background density)" and "eliminating the background color (or decreasing the background density)" are mutually contradictory. If the background color is darkened to make the highlighted area more visible, the hue of the background may change.

After adjusting the background density, copy and check the copy image quality.
If further image quality adjustments are still necessary, use the next procedure.

(3) Press the [BASIC] button on the Control Panel. Press the [◗] button to increase the copy density.

After increasing the copy density, copy and check the copy image quality.
With the copy density set to the maximum, if further image quality adjustments are still necessary, the service technician must use the next procedure.

(4) Enter adjustment mode [05]. Change the values for codes [1779 to 1798] to adjust the color density.

Color to adjust	Original mode	[05] code	Subcode	Recommended value	Acceptable value range	Default
Y (Yellow)	Text/Photo	05-1779	0/1	Set a value larger than 128 to increase the density. Set a value smaller than 128 to decrease the density.	0 to 255	128
	Text	05-1780	0/1			
	Printed image	05-1781	0/1			
	Photo	05-1782	0/1			
	Map	05-1783	0/1			
M (Magenta)	Text/Photo	05-1784	0/1			
	Text	05-1785	0/1			
	Printed image	05-1786	0/1			
	Photo	05-1787	0/1			
	Map	05-1788	0/1			
C (Cyan)	Text/Photo	05-1789	0/1			
	Text	05-1790	0/1			
	Printed image	05-1791	0/1			
	Photo	05-1792	0/1			
	Map	05-1793	0/1			
K (Black)	Text/Photo	05-1794	0/1			
	Text	05-1795	0/1			
	Printed image	05-1796	0/1			
	Photo	05-1797	0/1			
	Map	05-1798	0/1			

* Set the value in increments of approximately 10, while checking the copy image until the optimum value is obtained.

* The value for the code corresponding to the original mode (Text/Photo, Text, or Printed image) will affect the copy image quality in the Full color mode and the Auto color mode.

* The subcode varies according to the area where the density is adjusted. Refer to the table below and set the subcode for the area to be adjusted. The density of the highlighted area will vary, if the low- or medium-density area is mainly adjusted. Setting "2" for subcode allows you to adjust the high-density area. But it will not affect the highlighted area. Therefore, never change the value for the high-density area.

Subcode	Area where the density is adjusted
0	Low-density area
1	Medium-density area

❑ Precautions after the completion of the adjustment

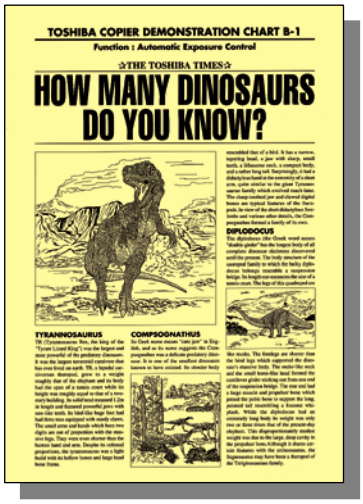
The adjustment may possibly provide an excessively dark background. Therefore, carefully perform the adjustment, while checking the copy image.

❑ Remarks

Enter a value within the recommended value range mentioned in the procedures. Otherwise, it may cause a loss in MFP performance, including degradation in the image quality and a reduction in the life of the consumables.

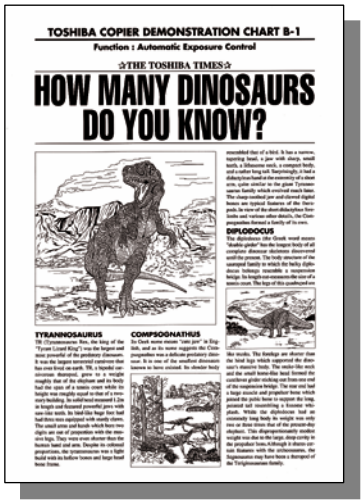
2.6 To Eliminate the Background Color

Before the adjustment



The background color of the original is also copied. Therefore, no clear contrast is made between the background and text.

After the adjustment



The background color is eliminated, allowing clear contrast between the background and text.

❑ Explanation

When a full-color original, such as colored paper, is copied, its background color is also copied. Therefore, no clear contrast is made between the background and the text on the copy. Perform background adjustment, in order to copy an original with a highly colored background, while eliminating the background color or making it white.

❑ Procedures

* The procedure to use varies, depending on whether to adjust the copy image quality in the Black mode or the Full color mode. Refer to the procedure corresponding to the user's particular request.

* Refer to the procedure to adjust the copy image quality in the Full color mode with the Printed image mode selected, in order to adjust the copy image quality in the Black mode with the Photo mode selected. The value adjusted is shared in the Black mode with the Photo mode selected and in the Full color mode with the Printed image mode selected. Therefore, adjusting the copy image quality in either of the modes affects that in the other mode.

2.6.1 To Adjust the Copy Image Quality in the Black Mode

* You can start with any of the procedures. But it is recommended to perform the procedures in order, as listed below. You can use one procedure in conjunction with another. But if this changes the image quality more than required or loses the effectiveness of the adjustment, restore the settings made in the previously used procedure to the original ones. Then use other procedures.
* Both the service technician and the user can use procedure (1).
* Only the service technician must use procedures (2) to (4).

(1) Press the [IMAGE] button on the Control Panel. Press the [BACKGROUND ADJUSTMENT] button. Press the [LIGHT] button to decrease the background density.

After decreasing the background density, copy and check the image quality.
With the background density set to the minimum, if further image quality adjustments are still necessary, the service technician must use the next procedure.

(2) Enter adjustment mode [05]. Change the values for codes [600/601] to adjust the background density.

Original mode	[05] code	Recommended value	Acceptable value range	Default
Text/Photo	05-600	Set a value smaller than 5.	1 to 9	5
Text	05-601			

* Set the value in increments of approximately 1, while checking the copy image until the optimum value is obtained.

After adjusting the background density, copy and check the copy image quality.
If further image quality adjustments are still necessary, use the next procedure.

(3) Enter adjustment mode [05]. Change the values for codes [590/591] to adjust the gamma curve balance of the low- and medium-density areas.

Original mode	[05] code	Subcode	Recommended value	Acceptable value range	Default
Text/Photo	05-590	0/1	Set a value smaller than 128.	0 to 255	128
Text	05-591	0/1			

* Set the value in increments of approximately 20, while checking the copy image until the optimum value is obtained.

* The subcode varies according to the area where the density is adjusted. Refer to the table below and set the subcode for the area to be adjusted. The background density will vary, if the low- or medium-density area is mainly adjusted. Setting "2" for the subcode allows you to adjust the high-density area. But it will not affect the background density. Therefore, never change the value for the high-density area.

Subcode	Area where the density is adjusted
0	Low-density area
1	Medium-density area

After adjusting the gamma curve balance, copy and check the copy image quality.
If further image quality adjustments are still necessary, use the next procedure.

(4) Adjust the background peak of range correction to lighten the copy image.

• Use steps (a) to (b) to adjust the background peak of range correction.

(a) Enter adjustment mode [05]. Change the values for codes [570/572] or [693/695] to set the background peak of range correction to "fixed."

• The code to use varies according to the density option (auto or manual), original mode, (Text/Photo or Text) and use of the RADF (MR-3018). Adjust the value for [05] code corresponding to the condition for which you would like to improve the image quality and set "1 in the one's or the ten's place.

* Set value (Ex.: To set the background/text peak in the manual and auto copy density mode to "fixed")

1 1

One's place: Set the background/text peak in auto copy density mode to "fixed" — See the table below for further information.

Ten's place: Set the background/text peak in manual copy density mode to "fixed" — See the table below for further information.

Value	Background peak	Text peak
1	Fixed	Fixed
2	Varied	Fixed
3	Fixed	Varied
4	Varied	Varied

To scan an original placed manually on the original glass

Original mode	[05] code	Copy density mode	Recommended value		Default	
			Ten's place	One's place	Ten's place	One's place
Text/Photo	05-570	Manual	1	Current value	2	2
		Auto	Current value	1		
Text	05-572	Manual	1	Current value	2	2
		Auto	Current value	1		

To scan an original fed from the RADF

Original mode	[05] code	Copy density mode	Recommended value		Default	
			Ten's place	One's place	Ten's place	One's place
Text/Photo	05-693	Manual	1	Current value	2	2
		Auto	Current value	1		
Text	05-695	Manual	1	Current value	2	2
		Auto	Current value	1		

(b)Enter adjustment mode [05]. Increase the values for codes [532/534] to adjust the background peak of range correction and lighten the copy image.
(Increase the number of pixels to be identified as "white" by range correction.)
• The code to use varies according to the original mode (Text/Photo or Text). Adjust the value for [05] code corresponding to the original mode for which you would like to improve the image quality and increase the current value by 10 to 30.

Original mode	[05] code	Recommended value	Acceptable value range	Default
Text/Photo	05-532	Current value + 10 or more	0 to 255	40
Text	05-534	Current value + 10 or more		40

❑ Precautions after the completion of the adjustment

The adjustment may possibly cause text handwritten with a pencil or light text to become illegible on the copy. Therefore, carefully perform the adjustment, while checking the copy image.

❑ Remarks

Enter a value within the recommended value range mentioned in the procedures. Otherwise, it may cause a loss in MFP performance, including degradation in the image quality.

2.6.2 To Adjust the Copy Image Quality in the Full Color Mode

* You can start with any of the procedures. But it is recommended to perform the procedures in order, as listed below. You can use one procedure in conjunction with another. But if this changes the image quality more than required or loses the effectiveness of the adjustment, restore the settings made in the previously used procedure to the original ones. Then use other procedures.
* Both the service technician and the user can use procedures (1) and (4).
* Only the service technician must use procedures (2) and (3).

(1) Press the [IMAGE] button on the Control Panel. Press the [BACKGROUND ADJUSTMENT] button. Press the [LIGHT] button to decrease the background density.

After decreasing the background density, copy and check the image quality.
With the background density set to the minimum, if further image quality adjustments are still necessary, the service technician must use the next procedure.

(2) Enter adjustment mode [05]. Change the values for codes [1688 to 1692] and [1698 to 1702] to adjust the background density.

Adjustment	Original mode	[05] code	Recommended value	Acceptable value range	Default
Automatic offsetting adjustment for background processing	Text/Photo	05-1688	Set a value smaller than 128.	0 to 255	128
	Text	05-1689			
	Printed image	05-1690			
	Photo	05-1691			
	Map	05-1692			
Manual offsetting adjustment for background processing	Text/Photo	05-1698			
	Text	05-1699			
	Printed image	05-1700			
	Photo	05-1701			
	Map	05-1702			

* The value for automatic offsetting adjustment for background processing will be applied, only if the automatic copy density mode is selected. On the other hand, the value for manual offsetting adjustment for background processing will be applied, only if the manual copy density mode is selected.

* Set the value in increments of approximately 10, while checking the copy image until the optimum value is obtained.

* The value for the code corresponding to the original mode (Text/Photo, Text, or Printed image) will affect the copy image quality in the Full color mode and the Auto color mode.

* The value adjusted for the background density is shared in the Full color mode with the Printed image mode selected and in the Black mode with the Photo mode selected. Therefore, adjusting the copy image quality in either of the modes affects that in the other mode. Perform copy image quality adjustment in the mode that is used for the adjustment, while checking that in the other mode.

<Note> "Making the highlighted area more visible (or increasing the background density)" and "eliminating the background color (or decreasing the background density)" are mutually contradictory. If the density of the background color is decreased, the highlighted area may become less visible.

After adjusting the background density, copy and check the copy image quality.
If further image quality adjustments are still necessary, or background elimination is necessary according to color, use the next procedure.

(3) Enter adjustment mode [05]. Change the values for codes [1779 to 1798] to adjust the color density.

Color to adjust	Original mode	[05] code	Subcode	Recommended value	Acceptable value range	Default
Y (Yellow)	Text/Photo	05-1779	0/1	Set a value larger than 128 to increase the density. Set a value smaller than 128 to decrease the density.	0 to 255	128
	Text	05-1780	0/1			
	Printed image	05-1781	0/1			
	Photo	05-1782	0/1			
	Map	05-1783	0/1			
M (Magenta)	Text/Photo	05-1784	0/1			
	Text	05-1785	0/1			
	Printed image	05-1786	0/1			
	Photo	05-1787	0/1			
	Map	05-1788	0/1			
C (Cyan)	Text/Photo	05-1789	0/1			
	Text	05-1790	0/1			
	Printed image	05-1791	0/1			
	Photo	05-1792	0/1			
	Map	05-1793	0/1			
K (Black)	Text/Photo	05-1794	0/1			
	Text	05-1795	0/1			
	Printed image	05-1796	0/1			
	Photo	05-1797	0/1			
	Map	05-1798	0/1			

* Set the value in increments of approximately 10, while checking the copy image until the optimum value is obtained.

* The value for the code corresponding to the original mode (Text/Photo, Text, or Printed image) will affect the copy image quality in the Full color mode and the Auto color mode.

* The subcode varies according to the area where the density is adjusted. Refer to the table below and set the subcode for the area to be adjusted. The background (highlight) density will vary, if the low- or medium-density area is mainly adjusted. Setting "2" for the subcode allows you to adjust the high-density area. But it will not affect the background density. Therefore, never change the value for the high-density area.

Subcode	Area where the density is adjusted
0	Low-density area
1	Medium-density area

After adjusting the background density, copy and check the copy image quality.
If further image quality adjustments are still necessary, use the next procedure.

(4) Press the [BASIC] button on the Control Panel. Select "TEXT" from among the original mode options.

*To have "TEXT" selected from among the original mode options by default, refer to procedure (1) in 2.8 To Eliminate Moiré.

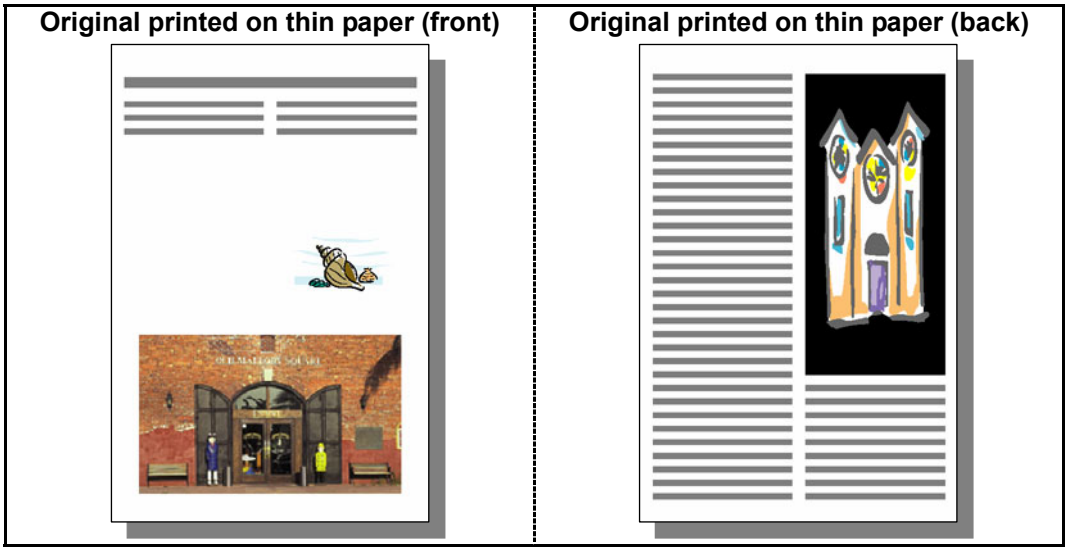
❑ Precautions after the completion of the adjustment

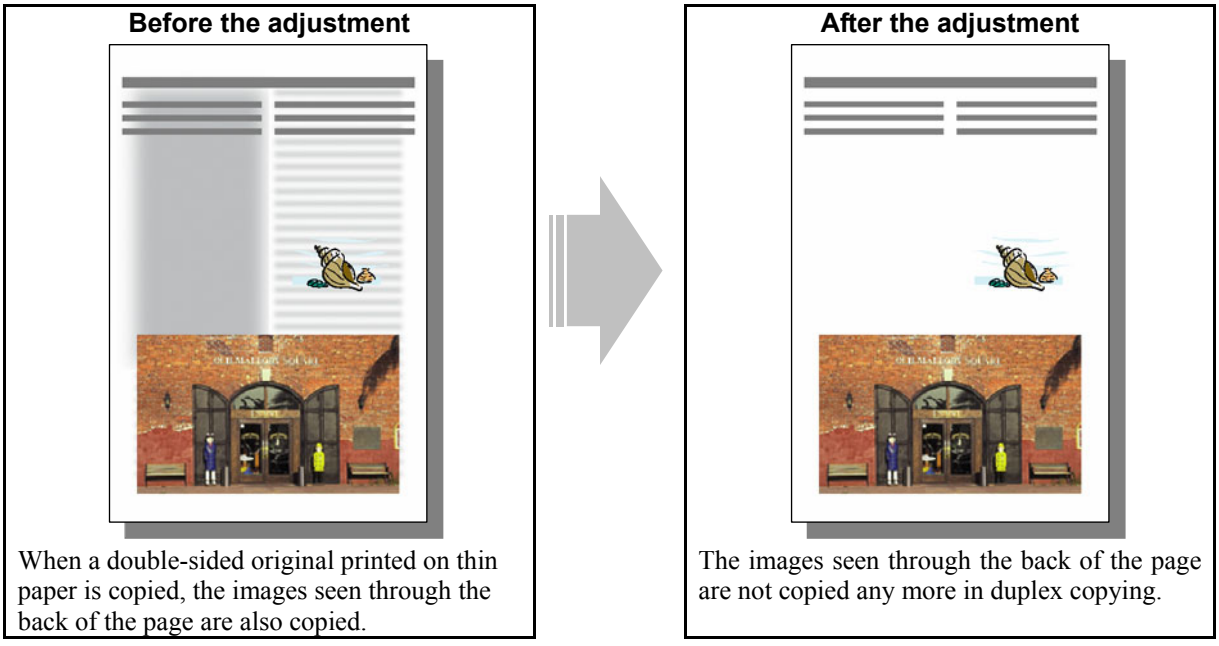
The adjustment may possibly cause the highlighted area to become less visible on the copy. Therefore, carefully perform the adjustment, while checking the copy image.

❑ Remarks

Enter a value within the recommended value range mentioned in the procedures. Otherwise, it may cause a loss in MFP performance, including degradation in the image quality.

2.7 To Avoid Copying the Image Seen through the Back of a Page Printed on Thin Paper





When a double-sided original printed on thin paper is copied, the images seen through the back of the page are also copied.

The images seen through the back of the page are not copied any more in duplex copying.

❑ Explanation

When a double-sided original printed on thin paper, such as a brochure and leaflet, is copied, the images seen through the back of the page are also copied. Perform background adjustment, in order to avoid this problem.

❑ Procedures

* The procedure to use varies, depending on whether to adjust the copy image quality in the Black mode or the Full color mode. Refer to the procedure corresponding to the user's particular request.

* Refer to the procedure to adjust the copy image quality in the Full color mode with the Printed image mode selected, in order to adjust the copy image quality in the Black mode with the Photo mode selected. The value adjusted is shared in the Black mode with the Photo mode selected and in the Full color mode with the Printed image mode selected. Therefore, adjusting the copy image quality in either of the modes affects that in the other mode.

2.7.1 To Adjust the Copy Image Quality in the Black Mode

* You can start with any of the procedures. But it is recommended to perform the procedures in order, as listed below. You can use one procedure in conjunction with another. But if this changes the image quality more than required or loses the effectiveness of the adjustment, restore the settings made in the previously used procedure to the original ones. Then use other procedures.
* Both the service technician and the user can use procedure (1).
* Only the service technician must use procedures (2) to (5).

(1) Press the [IMAGE] button on the Control Panel. Press the [BACKGROUND ADJUSTMENT] button. Press the [LIGHT] button to decrease the background density.

After decreasing the background density, copy and check the image quality.
With the background density set to the minimum, if further image quality adjustments are still necessary, the service technician must use the next procedure.

(2) Enter adjustment mode [05]. Change the values for codes [600/601] to adjust the background density.

Original mode	[05] code	Recommended value	Acceptable value range	Default
Text/Photo	05-600	Set a value smaller than 5.	1 to 9	5
Text	05-601			

* Set the value in increments of approximately 1, while checking the copy image until the optimum value is obtained.

After adjusting the background density, copy and check the copy image quality.
If further image quality adjustments are still necessary, use the next procedure.

(3) Press the [BASIC] button on the Control Panel. Press the [◁] button to decrease the copy density.
* Move the copy density indicator to the " ◁ " side for 1 or 2 steps. The images seen through the back of the page will no longer be copied. But remember that text will also be lightly copied, depending on the type of original.

After decreasing the copy density, copy and check the copy image quality.
With the copy density set to the minimum, if the images seen through the back of the page are still copied, or if you would like to prevent this problem without changing the copy density of text, use the next procedure.

(4) Adjust the background peak of range correction to lighten the copy image.

• Use steps (a) to (b) to adjust the background peak of range correction.

(a) Enter adjustment mode [05]. Change the values for codes [570/572] or [693/695] to set the background peak of range correction to "fixed."

• The code to use varies according to the density option (auto or manual), original mode, (Text/Photo or Text) and use of the RADF (MR-3018). Adjust the value for [05] code corresponding to the condition for which you would like to improve the image quality and set "1" in the one's or the ten's place.

* Set value (Ex.: To set the background/text peak in the manual and auto copy density mode to "fixed")

1 1

One's place: Set the background/text peak in auto copy density mode to "fixed" — See the table below for further information.

Ten's place: Set the background/text peak in manual copy density mode to "fixed" — See the table below for further information.

Value	Background peak	Text peak
1	Fixed	Fixed
2	Varied	Fixed
3	Fixed	Varied
4	Varied	Varied

To scan an original placed manually on the original glass

Original mode	[05] code	Copy density mode	Recommended value		Default	
			Ten's place	One's place	Ten's place	One's place
Text/Photo	05-570	Manual	1	Current value	2	2
		Auto	Current value	1		
Text	05-572	Manual	1	Current value	2	2
		Auto	Current value	1		

To scan an original fed from the RADF

Original mode	[05] code	Copy density mode	Recommended value		Default	
			Ten's place	One's place	Ten's place	One's place
Text/Photo	05-693	Manual	1	Current value	2	2
		Auto	Current value	1		
Text	05-695	Manual	1	Current value	2	2
		Auto	Current value	1		

(b)Enter adjustment mode [05]. Increase the values for codes [532/534] to adjust the background peak of range correction and lighten the copy image.
(Increase the number of pixels to be identified as "white" by range correction.)
• The code to use varies according to the original mode (Text/Photo or Text). Adjust the value for [05] code corresponding to the condition for which you would like to improve the image quality and increase the current value by 10 to 30.

Original mode	[05] code	Recommended value	Acceptable value range	Default
Text/Photo	05-532	Current value + 10 or more	0 to 255	40
Text	05-534	Current value + 10 or more		40

After adjusting the background peak, copy and check the copy image quality.
If further image quality adjustments are still necessary, use the next procedure.

(5) Enter adjustment mode [05]. Change the values for codes [590/591] to adjust the gamma curve balance of the low- and medium-density areas.

Original mode	[05] code	Subcode	Recommended value	Acceptable value range	Default
Text/Photo	05-590	0/1	Set a value smaller than 128.	0 to 255	128
Text	05-591	0/1			

* Set the value in increments of approximately 20, while checking the copy image until the optimum value is obtained.

* Since the subcode varies according to the area where the density is adjusted, refer to the table below and set the appropriate subcode. Remember that mainly adjusting the low- or medium-density area will change the copy density of the images seen through the back of the page. Setting "2" for the subcode will allow you to adjust the high-density area. But this will not solve the problem. Therefore, never change the value for the high-density area.

Subcode	Area where the density is adjusted
0	Low-density area
1	Medium-density area

❑ Precautions after the completion of the adjustment

The adjustment may possibly cause text handwritten with a pencil or light text to become illegible on the copy. Therefore, carefully perform the adjustment, while checking the copy image.

❑ Remarks

Enter a value within the recommended value range mentioned in the procedures. Otherwise, it may cause a loss in MFP performance, including degradation in the image quality and a reduction in the life of the consumables.

2.7.2 To Adjust the Copy Image Quality in the Full Color Mode

* You can start with any of the procedures. But it is recommended to perform the procedures in order, as listed below. You can use one procedure in conjunction with another. But if this changes the image quality more than required or loses the effectiveness of the adjustment, restore the settings made in the previously used procedure to the original ones. Then use other procedures.
* Both the service technician and the user can use procedures (1) and (3).
* Only the service technician must use procedure (2).

(1) Press the [IMAGE] button on the Control Panel. Press the [BACKGROUND ADJUSTMENT] button. Press the [LIGHT] button to decrease the background density.

After decreasing the background density, copy and check the copy image quality.
With the background density set to the minimum, if the images seen through the back of the page are still copied, the service technician must use the next procedure.

(2) Enter adjustment mode [05]. Change the values for codes [1688 to 1692] and [1698 to 1702] to adjust the background density.

Adjustment	Original mode	[05] code	Recommended value	Acceptable value range	Default
Automatic offsetting adjustment for background processing	Text/Photo	05-1688	Set a value smaller than 128.	0 to 255	128
	Text	05-1689			
	Printed image	05-1690			
	Photo	05-1691			
	Map	05-1692			
Manual offsetting adjustment for background processing	Text/Photo	05-1698			
	Text	05-1699			
	Printed image	05-1700			
	Photo	05-1701			
	Map	05-1702			

* The value for automatic offsetting adjustment for background processing will be applied, only if the automatic copy density mode is selected. On the other hand, the value for manual offsetting adjustment for background processing will be applied, only if the manual copy density mode is selected.

* Set the value in increments of approximately 10, while checking the copy image until the optimum value is obtained.

* The value for the code corresponding to the original mode (Text/Photo, Text, or Printed image) will affect the copy image quality in the Full color mode and the Auto color mode.

* The value adjusted for the background density is shared in the Full color mode with the Printed image mode selected and in the Black mode with the Photo mode selected. Therefore, adjusting the copy image quality in either of the modes affects that in the other mode. Perform copy image quality adjustment in the mode that is used for the adjustment, while checking that in the other mode.

<Note> "Making the highlighted area more visible (or increasing the background density)" and "eliminating the background color (or decreasing the background density)" are mutually contradictory. If the density of the background color is decreased, the highlighted area may become less visible.

After adjusting the background density, copy and check the copy image quality.
If further image quality adjustments are still necessary, use the next procedure.

(3) Press the [BASIC] button on the Control Panel. Select "TEXT" from among the original mode options.
* To have "TEXT" selected from among the original mode options by default, refer to procedure (1) in 2.8 To Eliminate Moiré.

❑ Precautions after the completion of the adjustment

The adjustment may possibly cause the highlighted area to become less visible on the copy. Therefore, carefully perform the adjustment, while checking the copy image.

❑ Remarks

Enter a value within the recommended value range mentioned in the procedures. Otherwise, it may cause a loss in MFP performance, including degradation in the image quality.

2.8 To Eliminate Moiré

Before the adjustment

Moiré occurs on the photo image.

After the adjustment

Moiré is eliminated and a clear copy image is obtained.

❑ Explanation

When an original containing photo images or gradational images (halftones) is copied, moiré sometimes occurs on the copy. Perform adjustment regarding image processing (sharpness intensity), in order to obtain a clear copy image, while eliminating moiré.

❑ Procedures

* You can start with any of the procedures. But it is recommended to perform the procedures in order, as listed below. You can use one procedure in conjunction with another. But if this changes the image quality more than required or loses the effectiveness of the adjustment, restore the settings made in the previously used procedure to the original ones. Then use other procedures.

* Both the service technician and the user can use procedures (1) and (2).

* Only the service technician must use procedure (3).

(1) Press the [BASIC] button on the Control Panel and select the original mode option, as follows:

- To copy in the Full color or the Auto color mode: Select the Printed image mode option.
- To copy in the Black mode: Select the Photo mode option.

* To have the above original mode options selected by default, use the following procedures:

To change the default original mode on the Control Panel

Use steps (a) to (d) to change default original mode.

(a) Press the [USER FUNCTIONS] button on the Control Panel to enter the "User Functions" menu.

(b) Press the [USER] button.

(c) Press the [COPY] button.

(d) In the "ORIGINAL MODE FOR COLOR" or "BLACK" option, press the button corresponding to the desired original mode option.

To change the default original mode in setting mode [08]

Enter setting mode [08]. Change the value for code [550] or [585] to change the original mode option, which is selected by default at power-on.

- In the Black mode

Value for 08-550	Default original mode at power-on
0	Text/Photo (default)
1	Photo
2	Text
3	Image smoothing
4	Custom

- In the Full color mode

Value for 08-585	Default original mode at power-on
0	Text/Photo (default)
1	Text
2	Printed image
3	Photo
4	Map
5	Custom

* Press the [BASIC] button on the Control Panel. Select "Custom" from among the original mode options in the Black or the Full color mode.
If the [CUSTOM] button is not displayed in the original mode option, change the values for the following codes to enable the "Custom" mode option.

In the Black mode: Enter setting mode [08]. Set "1" for code [508].

In the Full color mode: Enter setting mode [08]. Set "1" for code [506].

After changing the default original mode option, copy and check the copy image quality.
If further image quality adjustments are still necessary, use the next procedure.

(2) Press the [IMAGE] button on the Control Panel. Press the [SHARPNESS] button.
Press the [SOFT] button to soften the copy image.

After softening the copy image, copy and check the copy image quality.
With the sharpness intensity set to the minimum (softest), if further image quality adjustments are still necessary, the service technician must use the next procedure.

(3) Enter adjustment mode [05]. Change the values for codes [604/605], [1737 to 1741] and [1757] to adjust the sharpness intensity.

* Decreasing the sharpness intensity will minimize moiré.

Color mode	Original mode	[05] code	Recommended value	Acceptable value range	Default
Black	Text/Photo	05-604	Set a value smaller than 128.	0 to 255	128
	Text	05-605			
Full color	Text/Photo	05-1737	Set a value smaller than 128.	0 to 255	128
	Text	05-1738			
	Printed image	05-1739			
	Photo	05-1740			
	Map	05-1741			
Auto color	Text/Photo	05-1757	Set a value smaller than 128.	0 to 255	128

* Setting "0" provides the softest image, while setting "255" provides the sharpest image.
Changing the values for these codes will change the sharpness intensity, when the "Sharpness" indicator in the "IMAGE" menu is set to the center. Remember that 1 step of the indicator will increase or decrease the sharpness intensity by 25. If the sharpness intensity of the center value is changed, each step of the indicator will be changed accordingly. (For instance, if the center value is decreased by 25 (softer), the value of each step of the indicator will also be decreased by 25 (softer).)

* The value adjusted for the sharpness intensity is shared in the Full color mode with the Printed image mode selected and in the Black mode with the Photo mode selected. Therefore, adjusting the copy image quality in either of the modes affects that in the other mode. Perform copy image quality adjustment in the mode that is used for the adjustment, while checking that in the other mode.

<Note> "Minimizing moiré" and "Sharpening the copy image" are mutually contradictory. When the adjustment is performed to minimize moiré, the resolution of the copy image may decrease.

❑ Precautions after the completion of the adjustment

Nothing in particular.

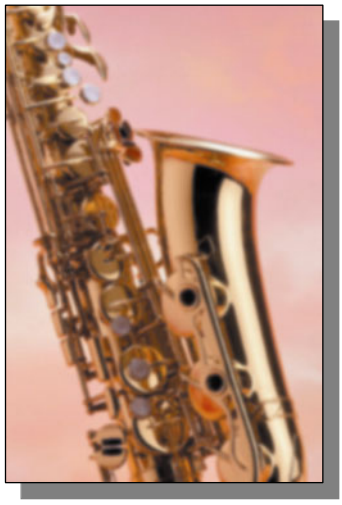
❑ Remarks

• Enter a value within the recommended value range mentioned in the procedures. Otherwise, it may cause a loss in MFP performance, including degradation in the image quality.

• Procedures (2) and (3) provide the same adjustment effect. However, procedure (3) allows more flexible adjustment.

2.9 To Copy Sharply (To enhance sharpness)

Before the adjustment



The image looks light and blurred on the copy.

After the adjustment

The edges are enhanced and the copy image becomes sharper.

❑ Explanation

Perform adjustment regarding image processing (sharpness intensity), in order to obtain a sharper copy image, when a light or blurred original is copied.

❑ Procedures

* You can start with any of the procedures. But it is recommended to perform the procedures in order, as listed below. You can use one procedure in conjunction with another. But if this changes the image quality more than required or loses the effectiveness of the adjustment, restore the settings made in the previously used procedure to the original ones. Then use other procedures.
* Both the service technician and the user can use procedures (1) and (2).
* Only the service technician must use procedure (3).

(1) Press the [IMAGE] button on the Control Panel. Press the [ONE TOUCH ADJUSTMENT] button.
Press the [CLEAR] button.

After selecting the "Clear" option, copy and check the copy image quality.
When the copy image quality with the "Clear" option selected is insufficient, cancel the "Clear" option and use the next procedure.
(The one-touch adjustment can be canceled by pressing the [ONE TOUCH ADJUSTMENT] button again.)

(2) Press the [IMAGE] button on the Control Panel. Press the [SHARPNESS] button.
Press the [SHARP] button to increase the sharpness intensity.

After increasing the sharpness intensity, copy and check the copy image quality.
With the sharpness intensity set to the maximum (sharpest), if further image quality adjustments are still necessary, the service technician must use the next procedure.

(3) Enter adjustment mode [05]. Change the values for codes [604/605], [1737 to 1741] and [1757] to adjust the sharpness intensity.

* Increasing the sharpness intensity will enhance the edges of the image.

Color mode	Original mode	[05] code	Recommended value	Acceptable value range	Default
Black	Text/Photo	05-604	Set a value larger than 128.	0 to 255	128
	Text	05-605			
Full color	Text/Photo	05-1737	Set a value larger than 128.	0 to 255	128
	Text	05-1738			
	Printed image	05-1739			
	Photo	05-1740			
	Map	05-1741			
Auto color	Text/Photo	05-1757	Set a value larger than 128.	0 to 255	128

* Setting "0" provides the softest image, while setting "255" provides the sharpest image.
Changing the values for these codes will change the sharpness intensity, when the "Sharpness" indicator in the "IMAGE" menu is set to the center. Remember that 1 step of the indicator will increase or decrease the sharpness intensity by 25. If the sharpness intensity of the center value is changed, each step of the indicator will be changed accordingly. (For instance, if the center value is increased by 25 (sharper), the value of each step of the indicator will also be increased by 25 (sharper).)

* The value adjusted for the sharpness intensity is shared in the Full color mode with the Printed image mode selected and in the Black mode with the Photo mode selected. Therefore, adjusting the copy image quality in either of the modes affects that in the other mode. Perform copy image quality adjustment in the mode that is used for the adjustment, while checking that in the other mode.

<Note> "Sharpening the copy image" and "Minimizing moiré" are mutually contradictory. When an adjustment is performed to sharpen the copy image, moiré may occur.

❑ Precautions after the completion of the adjustment

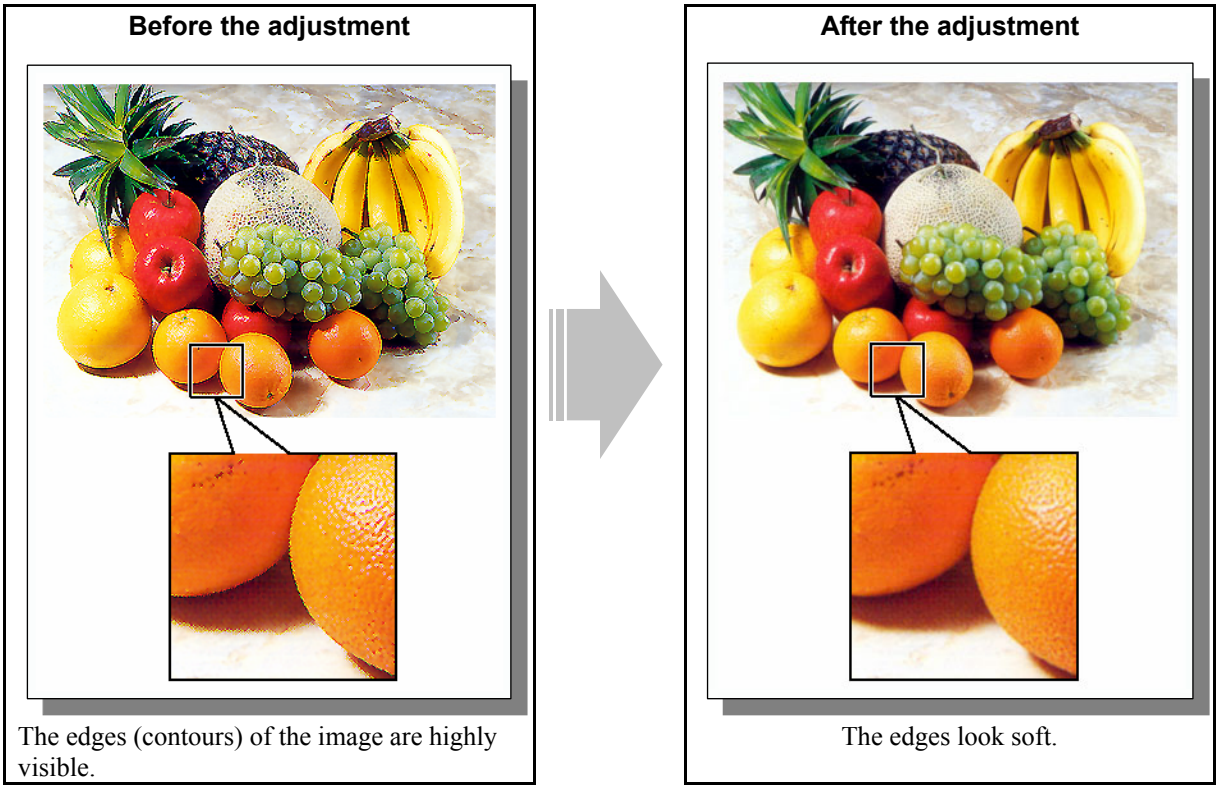
Nothing in particular.

❑ Remarks

- Enter a value within the recommended value range mentioned in the procedures. Otherwise, it may cause a loss in copier performance, including degradation in the image quality.

- Procedures (2) and (3) provide the same adjustment effect. However, procedure (3) allows more flexible adjustment.

2.10 To Make Photo Edges Look Softer



❑ Explanation

When a photo image is copied, the contours or edges of the image sometimes become highly visible on the copy. Perform adjustment regarding image processing (sharpness intensity), in order to soften the edges of the image.

❑ Procedures

* You can start with any of the procedures. But it is recommended to perform the procedures in order, as listed below. You can use one procedure in conjunction with another. But if this changes the image quality more than required or loses the effectiveness of the adjustment, restore the settings made in the previously used procedure to the original ones. Then use other procedures.
* Both the service technician and the user can use procedures (1) and (2).
* Only the service technician must use procedures (3) to (6).

(1) Press the [BASIC] button on the Control Panel and select the original mode option, as follows:

- To copy in the Full color or the Auto color mode: Select the Printed image mode option.
- To copy in the Black mode: Select the Photo mode option.

* When copying a photo image in the Full color mode, select the Photo mode option from among the original mode options.

* To have the above original mode options selected by default, refer to procedure (1) in 2.8 To Eliminate Moiré.

After changing the default original mode option, copy and check the copy image quality.
If further image quality adjustments are still necessary, use the next procedure.

(2) Press the [IMAGE] button on the Control Panel. Press the [SHARPNESS] button.
Press the [SOFT] button to soften the copy image.

After softening the copy image, copy and check the copy image quality.
With the sharpness intensity set to the minimum (softest), if further image quality adjustments are still necessary, the service technician must use the next procedure.

(3) Press the [BASIC] button on the Control Panel. Select "Custom" from among the original mode options in the Full color mode.

* If the [CUSTOM] button is not displayed in the original mode option in the Full color mode, enter setting mode [08] and set "1" for code [506] to enable the "Custom" mode option in the Full color mode.

* To have "Custom" selected from among the original mode options by default, refer to procedure (1) in 2.8 To Eliminate Moiré.

After changing the default original mode option, copy and check the copy image quality.
If further image quality adjustments are still necessary, use the next procedure.

(4) Enter adjustment mode [05]. Change the values for codes [604/605], [1737 to 1741] and [1757] to adjust the sharpness intensity.

* Decreasing the sharpness intensity will minimize the edges of the image.

Color mode	Original mode	[05] code	Recommended value	Acceptable value range	Default
Black	Text/Photo	05-604	Set a value smaller than 128.	0 to 255	128
	Text	05-605			
Full color	Text/Photo	05-1737	Set a value smaller than 128.	0 to 255	128
	Text	05-1738			
	Printed image	05-1739			
	Photo	05-1740			
	Map	05-1741			
Auto color	Text/Photo	05-1757	Set a value smaller than 128.	0 to 255	128

* Setting "0" provides the softest image, while setting "255" provides the sharpest image.
Changing the values for these codes will change the sharpness intensity, when the "Sharpness" indicator in the "IMAGE" menu is set to the center. Remember that 1 step of the indicator will increase or decrease the sharpness intensity by 25. If the sharpness intensity of the center value is changed, each step of the indicator will be changed accordingly. (For instance, if the center value is decreased by 25 (softer), the value of each step of the indicator will also be decreased by 25 (softer).)

* The value adjusted for the sharpness intensity is shared in the Full color mode with the Printed image mode selected and in the Black mode with the Photo mode selected. Therefore, adjusting the copy image quality in either of the modes affects that in the other mode. Perform copy image quality adjustment in the mode that is used for the adjustment, while checking that in the other mode.

<Note> "Minimizing the edges of the copy image" and "Sharpening the copy image" are mutually contradictory. When the adjustment is performed to minimize the edges, the resolution of the copy image may decrease.

After decreasing the sharpness intensity, copy and check the copy image quality.
If further image quality adjustments are still necessary, use the next procedure.

(5) Enter adjustment mode [05]. Change the values for codes [1630 to 1633] to adjust the maximum color density of text.

Color to adjust	[05] code	Recommended value	Acceptable value range	Default
Y (Yellow)	05-1630	Set a value larger than 5 to increase the density. Set a value smaller than 5 to decrease the density.	0 to 10	5
M (Magenta)	05-1631			
C (Cyan)	05-1632			
K (Black)	05-1633			

* Set the value in increment of 1, while checking the copy image until the optimum value is obtained.

After adjusting the maximum color density of the text, copy and check the copy image quality.
If further image quality adjustments are still necessary, use the next procedure.

(6) Enter adjustment mode [05]. Change the value for code [1725] to adjust the level of reproducibility in Text/Photo mode.

Color mode	[05] code	Recommended value	Acceptable value range	Default
Full color	05-1725	Set a value smaller than 3.	0 to 5	0

* Set the value in increment of 1, while checking the copy image until the optimum value is obtained. First, set "3" for this code and check the copy image. If further image quality improvements are still necessary, set "2." If even further improvements are still necessary, set "1" for this code.

* Remember that if a value larger than "3" is set, the edges of the image are enhanced (attaching importance to the reproducibility of text). The table below shows you the correlation between the value and image quality.

Value	Advantage of image quality	Reproducibility of edges
0	Default	Intermediate
1	Intended to improve the reproducibility of photos more than the one obtained when "2" is set.	Soft
2	Intended to improve the reproducibility of photos more than the one obtained when "3" is set.	↓
3	Equivalent to the one obtained when the default value ("0") is set.	Intermediate
4	Intended to improve the reproducibility of text more than the one obtained when "3" is set.	↓
5	Intended to improve the reproducibility of text more than the one obtained when "4" is set.	Sharp

❑ Precautions after the completion of the adjustment

When an original containing text is copied, the adjustment may possibly cause the text to become blurred on the copy. Therefore, carefully perform the adjustment, while checking the copy image.

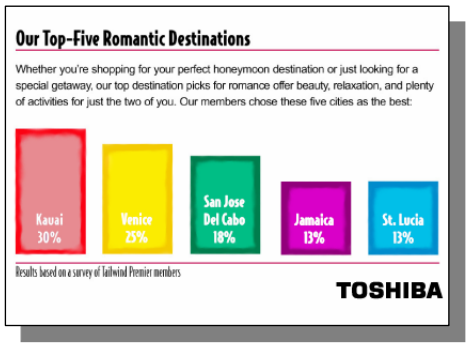
❑ Remarks

- Enter a value within the recommended value range mentioned in the procedures. Otherwise, it may cause a loss in MFP performance, including degradation in the image quality.

- Procedures (2) and (4) provide the same adjustment effect. However, procedure (3) allows more flexible adjustment.

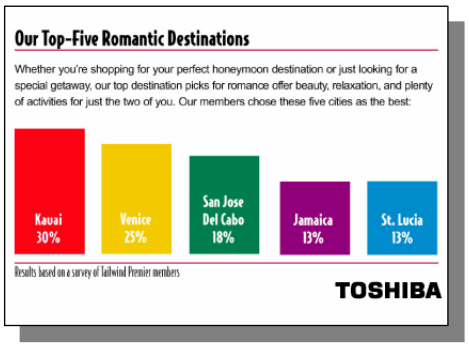
2.11 To Make Solid Filled Bold Text (Logo) Highly Colored

Before the adjustment


Our Top-Five Romantic Destinations
Whether you're shopping for your perfect honeymoon destination or just looking for a special getaway, our top destination picks for romance offer beauty, relaxation, and plenty of activities for just the two of you. Our members chose these five cities as the best:
Kauai 30%
Venice 25%
San Jose Del Cabo 18%
Jamaica 13%
St. Lucia 13%
Results based on a survey of Tailwind Premier members
TOSHIBA

The solid filled graph is not highly colored enough.

After the adjustment


Our Top-Five Romantic Destinations
Whether you're shopping for your perfect honeymoon destination or just looking for a special getaway, our top destination picks for romance offer beauty, relaxation, and plenty of activities for just the two of you. Our members chose these five cities as the best:
Kauai 30%
Venice 25%
San Jose Del Cabo 18%
Jamaica 13%
St. Lucia 13%
Results based on a survey of Tailwind Premier members
TOSHIBA

The solid filled graph becomes highly colored and sharper.

❑ Explanation

Solid filled bold text, such as a logo, is sometimes not highly colored on the copy. Change the original mode option, perform copy density adjustment and level adjustment for black headline text, in order to make the solid filled image more highly colored.

* This adjustment will have an effect only on copying in the Full color mode.

❑ Procedures

* The procedure to use varies, depending on whether to adjust the copy image quality of a black or colored logo. Refer to the procedure corresponding to the user's particular request.

2.11.1 To Adjust the Copy Image Quality of a Black Logo

* You can start with any of the procedures. But it is recommended to perform the procedures in order, as listed below. You can use one procedure in conjunction with another. But if this changes the image quality more than required or loses the effectiveness of the adjustment, restore the settings made in the previously used procedure to the original ones. Then use other procedures.
* Only the service technician must use procedures (1), (2), and (5).
* Both the service technician and the user can use procedures (3) and (4).

(1) Make sure that the color of the solid filled logo is not printed out of registration. If it is, perform color registration control.

* For further information regarding the adjustment procedures, refer to 1.5. To Correct Out-of-Registration Colors or the Service Manual.

After correcting out-of-registration colors, copy and check the copy image quality.
If further image quality adjustments are still necessary, use the next procedure.

(2) Enter adjustment mode [05]. Change the values for codes [7811/7812] or [7827/7828] to adjust the level of black headline text.

Color mode	Original mode	[05] code	Recommended value	Acceptable value range	Default
Full color	Text/Photo	05-7811	Set a value larger than 4.	0 to 8	0
	Text	05-7812			
Auto color	Text/Photo	05-7827	Set a value larger than 4.	0 to 8	0
	Text	05-7828			

* Set the value in increments of approximately 1, while checking the copy image until the optimum value is obtained.

After adjusting the level of black headline text, copy and check the copy image quality.
If further image quality adjustments are still necessary, use the next procedure.

(3) Perform color balance adjustment to enhance black.

• Use steps (a) through (d) to perform the adjustment.

(a) Press the [IMAGE] button on the Control Panel.
(b) Press the [COLOR BALANCE] button.
(c) Press the [+] button to enhance the tint of [BLACK].
* Press the [DETAIL] button. The tint of the color can be adjusted according to the density area (low-, medium- or high-density area).
(d) Press the [ENTER] button.

After adjusting the tint of black, copy and check the copy image quality.
With the tint of black set to the maximum, if further image quality adjustments are still necessary, use the next procedure.

(4) Press the [BASIC] button on the Control Panel. Select "TEXT" from among the original mode options.

* To have "TEXT" selected from among the original mode options by default, refer to procedure (1) in 2.8 To Eliminate Moiré.

After selecting the Text mode, copy and check the copy image quality.

If further image quality adjustments are still necessary, the service technician must use the next procedure.

(5) Enter adjustment mode [05]. Change the value for code [1795] to adjust the black density.

Color to adjust	Original mode	[05] code	Subcode	Recommended value	Acceptable value range	Default
K (Black)	Text	05-1795	0/1/2	Set a value larger than 128.	0 to 255	128

* Set the value in increments of approximately 10, while checking the copy image until the optimum value is obtained.

* The subcode varies according to the area where the density is adjusted. Refer to the table below and set the subcode for the area to be adjusted.

Subcode	Area where the density is adjusted
0	Low-density area
1	Medium-density area
2	High-density area

❑ Precautions after the completion of the adjustment

The adjustment may possibly cause the highly or deeply colored area, such as in a photo, to become blurred on the copy. Also, it may also cause offset failure, grained images and degradation in gradation. Therefore, carefully perform the adjustment, while checking the copy image.

2.11.2 To Adjust the Copy Image Quality of a Colored Logo

* You can start with any of the procedures. But it is recommended to perform the procedures in order, as listed below. You can use one procedure in conjunction with another. But if this changes the image quality more than required or loses the effectiveness of the adjustment, restore the settings made in the previously used procedure to the original ones. Then use other procedures.
* Both the service technician and the user can use procedures (1) to (3).
* Only the service technician must use procedure (4).

(1) Press the [BASIC] button on the Control Panel. Press the [◗] button to increase the copy density.

After increasing the copy density, copy and check the copy image quality.
With the copy density set to the maximum, if further image quality adjustments are still necessary, use the next procedure.

(2) Perform color balance adjustment or RGB adjustment to adjust the tint of the colors in general.

• Use steps (a) through (d) to perform the adjustment.

(a) Press the [IMAGE] button on the Control Panel.
(b) Press the [COLOR BALANCE] button to adjust the color balance by changing the amount of toner
(c) Press the [+] button to enhance the tint of the color or the [-] button to decrease it.
* After selecting the color balance by changing the amount of toner (C, M, Y and K), press the [DETAIL] button. The tint of the color can be adjusted according to density area (low-, medium- or high-density area).
(d) Press the [ENTER] button.

After adjusting the tint of the colors, copy and check the copy image quality.
If further image quality adjustments are still necessary, use the next procedure.

(3) Press the [BASIC] button on the Control Panel. Select "TEXT" or "MAP" from among the original mode options.

* To have "TEXT" or "MAP" selected from among the original mode options by default, refer to procedure (1) in 2.8 To Eliminate Moiré.

After selecting the Text or Map mode, copy and check the copy image quality.
If further image quality adjustments are still necessary, the service technician must use the next procedure.

(4) Enter adjustment mode [05]. Change the values for codes [1780/1785/1790/1795] or [1783/1788/1793/1798] to adjust the color density.

Color to adjust	Original mode	[05] code	Subcode	Recommended value	Acceptable value range	Default
Y (Yellow)	Text	05-1780	0/1/2	Set a value larger than 128.	0 to 255	128
	Map	05-1783	0/1/2			
M (Magenta)	Text	05-1785	0/1/2			
	Map	05-1788	0/1/2			
C (Cyan)	Text	05-1790	0/1/2			
	Map	05-1793	0/1/2			
K (Black)	Text	05-1795	0/1/2			
	Map	05-1798	0/1/2			

* Set the value in increments of approximately 10, while checking the copy image until the optimum value is obtained.

* The subcode varies according to the area where the density is adjusted. Refer to the table below and set the subcode for the area to be adjusted.

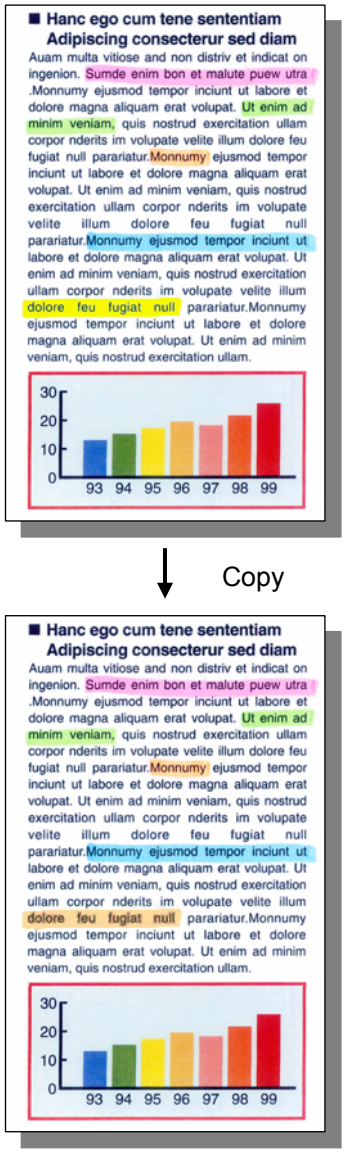
Subcode	Area where the density is adjusted
0	Low-density area
1	Medium-density area
2	High-density area

❑ Precautions after the completion of the adjustment

The adjustment may possibly cause a dark-colored area, such as in a photo, to become blurred on the copy. Also, it may also cause offset failure, grained images and degradation in gradation. Therefore, carefully perform the adjustment, while checking the copy image.

2.12 To Sharply Contrast the Hues of Highlighters on the Copy

Before the adjustment


■ Hanc ego cum tene sententiam
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Auam multa vitiose and non distriv et indicat on ingenion. Sumde enim bon et malute puew utra .Monnumy ejusmod tempor inciunt ut labore et dolore magna aliquam erat volupat. Ut enim ad minim veniam, quis nostrud exercitation ullam corpor nderits im volupate velite illum dolore feu fugiat null parariatur.Monnumy ejusmod tempor inciunt ut labore et dolore magna aliquam erat volupat. Ut enim ad minim veniam, quis nostrud exercitation ullam corpor nderits im volupate velite illum dolore feu fugiat null parariatur.Monnumy ejusmod tempor inciunt ut labore et dolore magna aliquam erat volupat. Ut enim ad minim veniam, quis nostrud exercitation ullam.
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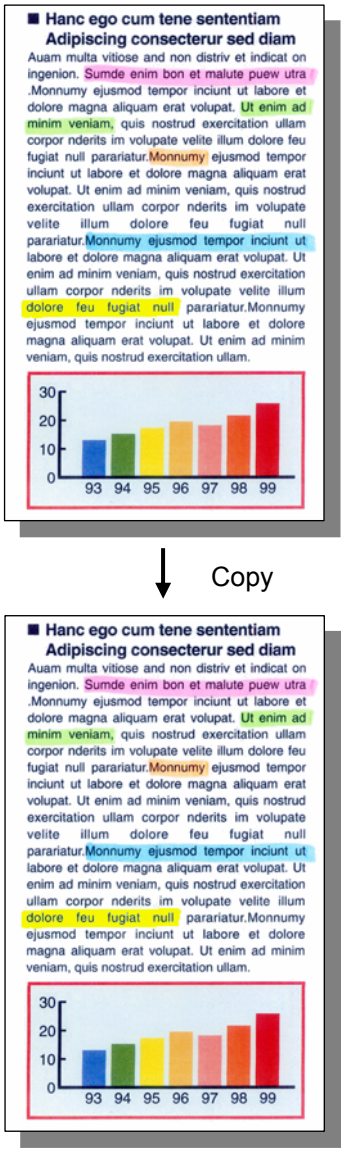
30
20
10
0
93 94 95 96 97 98 99

The hues of highlighters are not accurately reproduced. The areas marked with 2 different colored highlighters are reproduced in the same hue. They are indistinguishable.

After the adjustment


■ Hanc ego cum tene sententiam
Adipiscing consecterur sed diam
Auam multa vitiose and non distriv et indicat on ingenion. Sumde enim bon et malute puew utra .Monnumy ejusmod tempor inciunt ut labore et dolore magna aliquam erat volupat. Ut enim ad minim veniam, quis nostrud exercitation ullam corpor nderits im volupate velite illum dolore feu fugiat null parariatur.Monnumy ejusmod tempor inciunt ut labore et dolore magna aliquam erat volupat. Ut enim ad minim veniam, quis nostrud exercitation ullam corpor nderits im volupate velite illum dolore feu fugiat null parariatur.Monnumy ejusmod tempor inciunt ut labore et dolore magna aliquam erat volupat. Ut enim ad minim veniam, quis nostrud exercitation ullam.
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30
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0
93 94 95 96 97 98 99

The areas marked with 2 different colored highlighters are accurately reproduced and distinguishable on the copy.

❑ Explanation

When an original containing text or areas marked with highlighters is copied, their hues may sometimes not be accurately reproduced on the copy. The inks of highlighters are special. Therefore, their hues cannot be accurately reproduced. To reproduce the hues of similar highlighters, such as yellow and green, while producing sharp contrasts on the copy, perform color adjustment (color balance adjustment or RGB adjustment) and color density adjustment. Also, the e-STUDIO2500c/3500c/3510c offers the "ONE TOUCH ADJUSTMENT" option to allow the setting specifically for reproducing text or areas marked with highlighters.

❑ Procedures

* You can start with any of the procedures. But it is recommended to perform the procedures in order, as listed below. You can use one procedure in conjunction with another. But if this changes the image quality more than required or loses the effectiveness of the adjustment, restore the settings made in the previously used procedure to the original ones. Then use other procedures.
* Both the service technician and the user can use procedures (1) and (3).
* Only the service technician must use procedures (2) and (4).

(1) Press the [IMAGE] button on the Control Panel. Press the [ONE TOUCH ADJUSTMENT] button. Press the [MARKER] button.

After selecting the "Marker" option, copy and check the copy image quality.
When the copy image quality with the "Marker" option is insufficient, cancel the "Marker" option and use the next procedure.
(The one-touch adjustment can be canceled by pressing the [ONE TOUCH ADJUSTMENT] button again.)

(2) Enter adjustment mode [05]. Change the value for code [1769] to adjust the tint of colors in Marker mode.

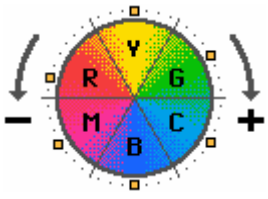
[05] code	Subcode	Acceptable value range	Default
05-1769	0 to 5	0 to 6	3

* Set the value in increments of approximately 1, while checking the copy image until the optimum value is obtained.

* The subcode varies according to the color where the adjustment is performed. Refer to the table below and set the subcode for the color to be adjusted.

Subcode	Color to adjust
0	Y (Yellow)
1	M (Magenta)
2	C (Cyan)
3	R (Red)
4	G (Green)
5	B (Blue)

* Setting a value larger than the default value moves the hue of the color selected to [+] as shown below. On the other hand, setting a value smaller than the default value moves it to [-].
(For instance, set 6 for R (Red). Then the tint of the red is closely matched with that of Y (Yellow). Set 0 for R (Red). Then the tint of the red will be closely matched with that of M (Magenta).



After adjusting the hue, copy and check the copy image quality.
If further image quality adjustments are still necessary, use the next procedure.

(3) Perform color balance adjustment or RGB adjustment to adjust the tint of the colors in general.

* For further information regarding the adjustment procedures, refer to procedure (4) in 2.2 To Closely Match the Color Balance of the Original.

After adjusting the tint of colors, copy and check the copy image quality.
If further image quality adjustments are still necessary, the service technician must use the next procedure.

(4) Enter adjustment mode [05]. Change the values for codes [1779 to 1798] to adjust the color density.

Color to adjust	Original mode	[05] code	Subcode	Recommended value	Acceptable value range	Default
Y (Yellow)	Text/Photo	05-1779	0/1/2	Set a value larger than 128 to increase the density. Set a value smaller than 128 to decrease the density.	0 to 255	128
	Text	05-1780	0/1/2			
	Printed image	05-1781	0/1/2			
	Photo	05-1782	0/1/2			
	Map	05-1783	0/1/2			
M (Magenta)	Text/Photo	05-1784	0/1/2			
	Text	05-1785	0/1/2			
	Printed image	05-1786	0/1/2			
	Photo	05-1787	0/1/2			
	Map	05-1788	0/1/2			
C (Cyan)	Text/Photo	05-1789	0/1/2			
	Text	05-1790	0/1/2			
	Printed image	05-1791	0/1/2			
	Photo	05-1792	0/1/2			
	Map	05-1793	0/1/2			
K (Black)	Text/Photo	05-1794	0/1/2			
	Text	05-1795	0/1/2			
	Printed image	05-1796	0/1/2			
	Photo	05-1797	0/1/2			
	Map	05-1798	0/1/2			

* Set the value in increments of approximately 10, while checking the copy image until the optimum value is obtained.

* The value for the code corresponding to the original mode (Text/Photo, Text, or Printed image) will affect the copy image quality in the Full color mode and the Auto color mode.

* The subcode varies according to the area where the density is adjusted. Refer to the table below and set the subcode for the area to be adjusted.

Subcode	Area where the density is adjusted
0	Low-density area
1	Medium-density area
2	High-density area

❑ Precautions after the completion of the adjustment

The adjustment may possibly vary the hues of areas (including photo images and text) other than those marked with highlighters. Therefore, carefully perform the adjustment, while checking the copy image.

❑ Remarks

Enter a value within the recommended value range mentioned in the procedures. Otherwise, it may cause a loss in MFP performance, including degradation in the image quality.

2.13 To Obtain a Good Color Balance on Thick Paper

Before the adjustment

The copy image looks light on thick paper.

After the adjustment

The copy image looks darker and sharper even on thick paper.

❑ Explanation

When a copy is made on thick paper in the thick paper mode, the copy image sometimes looks light. In the thick paper mode, the amount of toner used is reduced in advance, in order to avoid a toner fixing problem. Adjust the amount of toner used, while checking the toner fixing, in order to obtain a dark and sharp copy image on thick paper.

❑ Procedures

* You can start with any of the procedures. But it is recommended to perform the procedures in order, as listed below. You can use one procedure in conjunction with another. But if this changes the image quality more than required or loses the effectiveness of the adjustment, restore the settings made in the previously used procedure to the original ones. Then use other procedures.
* Only the service technician must use procedures (1) and (3).
* Both the service technician and the user can use procedure (2).

(1) Enter adjustment mode [05]. Change the values for codes [1613 to 1618] to adjust the amount of toner used.

• The code to use varies according to the paper type. Adjust the value for [05] code corresponding to the paper type for which you would like to improve the image quality and increase the value to obtain the copy density that the user desires.

Paper type	[05] code	Recommended value	Acceptable value range	Default
Thick 1	05-1613	Set a value larger than 252.	0 to 255	252
Thick 2	05-1614	Set a value larger than 252.		252
Thick 3	05-1615	Set a value larger than 252.		252
OHP	05-1616	Set a value larger than 240.		240
SPECIAL 1	05-1617	Set a value larger than 252.		252
SPECIAL 2	05-1618	Set a value larger than 252.		252

* Set the value in increments of approximately 4, while checking the copy image until the optimum value is obtained.

* The table below shows you the acceptable paper weight for the paper type.

Paper type	Acceptable paper weight	
Thick 1	106 to 163 g/m²	Max. 60 lb. Cover
Thick 2	164 to 209 g/m²	Max. 110 lb. Index
Thick 3	210 to 256 g/m²	Max. 140 lb. Index

* Use the recommended OHP transparencies and special paper.

After adjusting the amount of toner used, copy and check the copy image quality.
If further image quality adjustments are still necessary, the service technician must use the next procedure.

(2) Perform color balance adjustment or RGB adjustment to adjust the tint of the colors in general.

* For further information regarding the adjustment procedures, refer to procedure (4) in 2.2 To Closely Match the Color Balance of the Original.

After adjusting the tint of colors, copy and check the copy image quality.
If further image quality adjustments are still necessary, use the next procedure.

(3) Enter adjustment mode [05]. Change the values for codes [1779 to 1798] to adjust the color density.

Color to adjust	Original mode	[05] code	Subcode	Recommended value	Acceptable value range	Default
Y (Yellow)	Text/Photo	05-1779	0/1/2	Set a value larger than 128 to increase the density. Set a value smaller than 128 to decrease the density.	0 to 255	128
	Text	05-1780	0/1/2			
	Printed image	05-1781	0/1/2			
	Photo	05-1782	0/1/2			
	Map	05-1783	0/1/2			
M (Magenta)	Text/Photo	05-1784	0/1/2			
	Text	05-1785	0/1/2			
	Printed image	05-1786	0/1/2			
	Photo	05-1787	0/1/2			
	Map	05-1788	0/1/2			
C (Cyan)	Text/Photo	05-1789	0/1/2			
	Text	05-1790	0/1/2			
	Printed image	05-1791	0/1/2			
	Photo	05-1792	0/1/2			
	Map	05-1793	0/1/2			
K (Black)	Text/Photo	05-1794	0/1/2			
	Text	05-1795	0/1/2			
	Printed image	05-1796	0/1/2			
	Photo	05-1797	0/1/2			
	Map	05-1798	0/1/2			

* Set the value in increments of approximately 10, while checking the copy image until the optimum value is obtained.

* The value for the code corresponding to the original mode (Text/Photo, Text, or Printed image) will affect the copy image quality in the Full color mode and the Auto color mode.

* The subcode varies according to the area where the density is adjusted. Refer to the table below and set the subcode for the area to be adjusted.

Subcode	Area where the density is adjusted
0	Low-density area
1	Medium-density area
2	High-density area

❑ Precautions after the completion of the adjustment

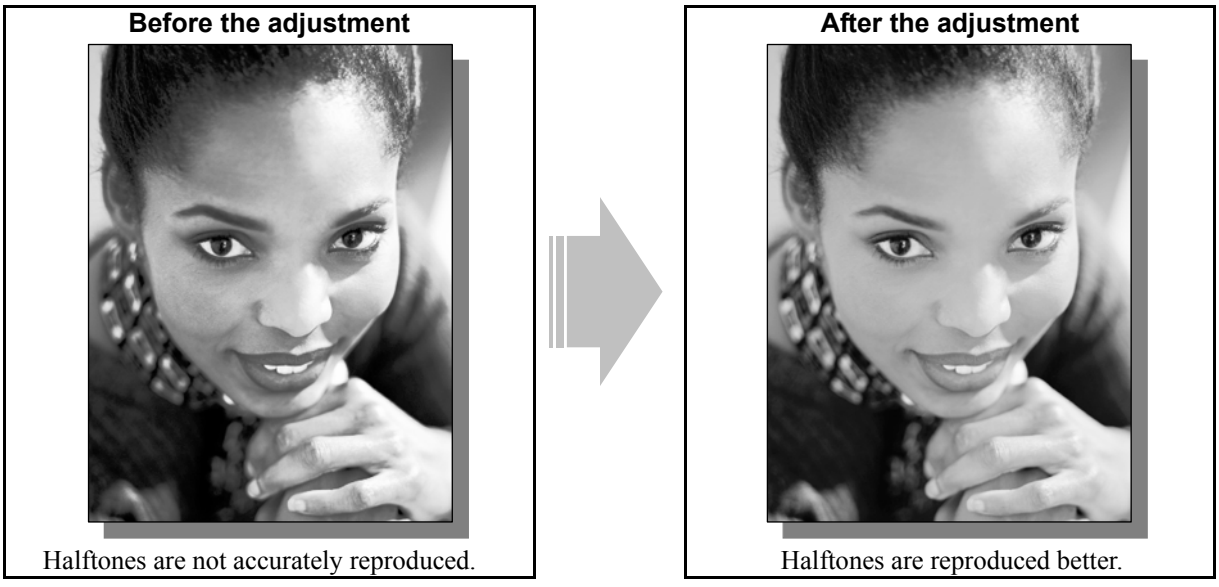
Nothing in particular.

❑ Remarks

• Enter a value within the recommended value range mentioned in the procedures. Otherwise, it may cause a loss in MFP performance, including degradation in the image quality and a reduction in the life of the consumables

• If the adjustment causes a toner fixing problem, decrease the values for codes 05-1613 to 1618.

2.14 To Obtain Smooth Gray-Scale Photo Images



❑ Explanation

When a photo image or gradational image is copied in the Black mode with the Text/Photo mode selected, halftones are not accurately reproduced. Select the Photo mode or the Image smoothing mode from among the original mode options, in order to reproduce halftones better in the Black mode.

❑ Procedures

* Both the service technician and the user can perform all adjustments.

(1) Press the [BASIC] button on the Control Panel. Select "PHOTO" from among the original mode options.
* To have "PHOTO" selected from among the original mode options by default, refer to procedure (1) in 2.8 To Eliminate Moiré.

After selecting the Photo mode, copy and check the copy image quality.
If further image quality adjustments are still necessary, use the next procedure.

(2) Press the [BASIC] button on the Control Panel. Select "IMAGE SMOOTHING" from among the original mode options.
* To have "IMAGE SMOOTHING" selected from among the original mode options by default, refer to procedure (1) in 2.8 To Eliminate Moiré.

❑ Precautions after the completion of the adjustment

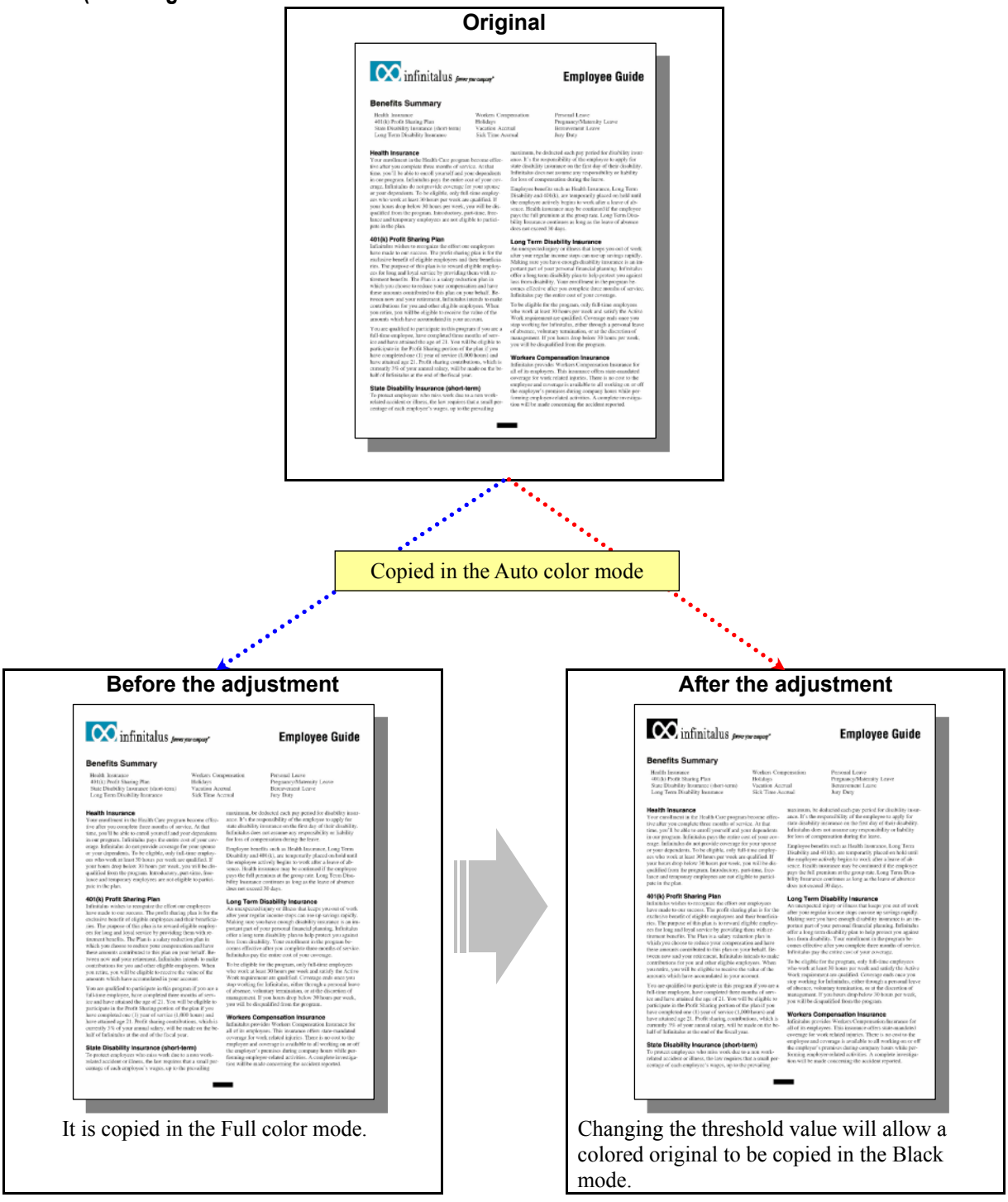
Nothing in particular.

❑ Remarks

When "PHOTO" or "IMAGE SMOOTHING" is selected from among the original mode options, image processing is performed to give a higher priority to the accurate reproducibility of halftones. As a result, the copying speed will be slowed down, compared to other modes.

2.15 To Change the Threshold in Auto Color Mode

(To change the threshold between the Full Color mode and the Black mode to meet the user's needs)


Original
infinitalus
Employee Guide
Benefits Summary
Copied in the Auto color mode
Before the adjustment
It is copied in the Full color mode.
After the adjustment
Changing the threshold value will allow a colored original to be copied in the Black mode.

❑ Explanation

When the Auto color mode is selected, it will be automatically determined whether an original is colored or black-and-white. Then it will be copied in the Full color mode or the Black mode. But adjust the threshold value, in order to change the threshold between the Black mode and the Full color mode and suit the preferences of the user.

❑ Procedures

* You can start with any of the procedures. But it is recommended to perform the procedures in order, as listed below. You can use one procedure in conjunction with another. But if this changes the image quality more than required or loses the effectiveness of the adjustment, restore the settings made in the previously used procedure to the original ones. Then use other procedures.
* Both the service technician and the user can use procedure (1).
* Only the service technician must use procedure (2).

(1) Press the [BASIC] button on the Control Panel. Press the [ZOOM] button. Specify an original size and a copy size.

* When a non-standard sized original is copied, an area outside the original (or the original cover) may also be scanned. This may prevent the original size from being accurately detected. If the original size is specified in the reduction and enlargement copying functions beforehand, the area outside the original will no longer be scanned. As a result, the original size will be accurately detected. Also, clean the original cover, if it is soiled. Otherwise, the type of original cannot be accurately detected.

After specifying the original size and copy size, copy and check the copy image quality.
If further image quality adjustments are still necessary, the service technician must use the next procedure.

(2) Enter adjustment mode [05]. Change the values for codes [1675/1676] to adjust the threshold value in the Auto color mode.

* As the set value is increased, the original will be more likely to be recognized as black-and-white. On the other hand, if the value is decreased, it will be more likely to be recognized as full color.

Threshold to adjust	[05] code	Acceptable value range	Default
Threshold when an original is manually placed on the original glass	05-1675	0 to 255	70
Threshold when an original is placed on the original glass from the RADF (MR-3018)	05-1676	0 to 255	70

* Set the value in increments of approximately 30, while checking the copy image until the optimum value is obtained.

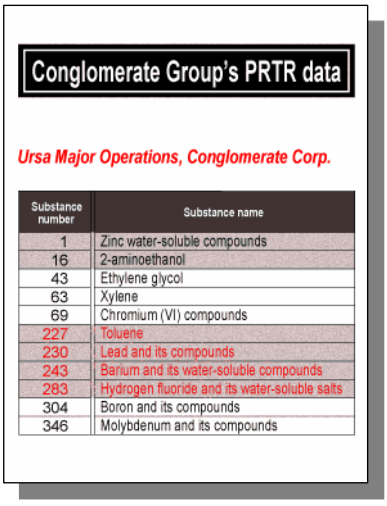
❑ Precautions after the completion of the adjustment

- When a non-standard sized original is copied, an area outside the original (or the original cover) may also be scanned. This may prevent the original size from being accurately detected. If the original cover is soiled, the type of original cannot be accurately detected. Therefore, instruct the users to clean the original cover on a routine basis (once a week).

- After the threshold in the Auto color mode is adjusted, based on a particular type of original, other types of original may not be correctly detected. Therefore, carefully perform the adjustment, while checking whether any type of original is correctly detected.

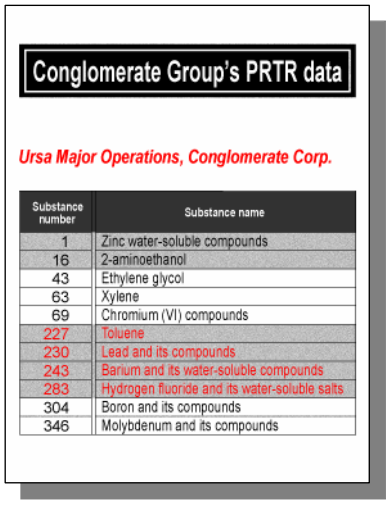
2.16 To Adjust the Twin-Color Copy Image Quality

Before the adjustment



When a twin-color copy is made in the red and black mode, red is blended into a part of the black area.

After the adjustment



The blend of undesired colors in the black area is reduced.

❑ Explanation

When a twin-color copy is made, red may be blended into the black area or colors other than black on the twin-color copy may look different from what the user desires. Adjust the tint of the colors, the reproducibility of black in the Red and black mode, or the boundary between black and colors other than black, in order to reduce a blend of undesired colors into the black area or adjust the tint of colors other than black.

❑ Procedures

* The procedure to use varies, depending on whether to adjust the tint of colors other than black, the reproducibility of black in the Red and black mode, or the boundary between black and colors other than black. Refer to the procedure corresponding to the user's particular request.

2.16.1 To Adjust the Tint of Colors other than Black

*Both the service technician and the user can perform all adjustments.

(1) Press the [IMAGE] button on the Control Panel. Press the [TWIN COLOR COPY] button.
Select the Twin-color copy mode from among the twin color copy mode options.

• To select Red and black mode:
Press the [RED & BLACK] button.

• To select the Twin-color selectable mode:
Use steps (a) through (d) to select the Twin-color selectable mode.
(a) Press the [TWIN COLOR SELECTABLE] button.
(b) Press the [CHANGE BLACK TO] button. Press the button for the desired color.
(c) Press the [SECOND COLOR] button. Press the button for the desired color.
(d) Press the [ENTER] button.

Use procedure (2).

(2) Press the [ADJUST] button. Press the [+] button or the [-] button for the color to be adjusted, in order to adjust the tint of colors other than black.

• In the Red and black mode:
  • Press the [-] button to decrease yellow and the [+] button to enhance magenta, in order to enhance the tint of red.
  • Press the [+] button to enhance yellow and the [-] button to decrease magenta, in order to decrease the tint of red.

• In the Twin-color selectable mode:
Press the [+] button to enhance the tint of the color or the [-] button to decrease it.

*Press the [DETAIL] button. The tint of the color can be adjusted according to the density area (low-, medium- or high-density area).

❑ Precautions after the completion of the adjustment

Nothing in particular.

2.16.2 To Adjust the Reproducibility of Black in the Red and Black Mode

* The service technician must perform all adjustments.

(1) Enter adjustment mode [05]. Set "1" for code [1761] to change the setting, which is intended to improve the reproducibility of black areas.

* If you are making a twin-color copy in the red and black mode, red may be blended into the black area. In this case, switching the value for this code reduces a blend of red in the black area on the copy.

Value for 05-1761	Reproducibility of black in the red and black mode for a twin-color copy
0	Default
1	Intended to improve the reproducibility of black

❑ Precautions after the completion of the adjustment

Setting "1" for code 05-1761 may not provide a clear boundary between red and black. Therefore, carefully perform the adjustment, while checking the copy image.

2.16.3 To Adjust the Boundary between Black and Colors other than Black

*Both the service technician and the user can use procedures (1) and (2).
*Only the service technician must use procedure (3).

(1) Press the [IMAGE] button on the Control Panel. Press the [TWIN COLOR COPY] button.
Press the [RED&BLACK] button to enter the Red and black mode.

Use procedure (2).

(2) Press the [ADJUST] button. Press the [←] button or the [→] button for Range Adjustment, in order to adjust the boundary between red and black.
- [←] "RED": The black area decreases and the red area increases.
- [→] "BLACK": The black area increases and the red area decreases.

After adjusting the boundary, copy and check the copy image quality.
If further image quality adjustments are still necessary, the service technician must use the next procedure.

(3) Enter adjustment mode [05]. Change the values for codes [7641/7642] to adjust the boundary between black and colors other than black.
*As the set value is increased, the area of "CHANGE BLACK TO" will become larger. On the other hand, if the value is decreased, the area of "SECOND COLOR" will become larger.

Mode to adjust	[05] code	Subcode	Recommended value	Default
Red and black mode	05-7641	0/1/2	0 to 255	128
Twin color – Red and black mode ("RED" selected in Twin color selectable mode)	05-7642			

*The subcode varies according to the area where the density is adjusted. Refer to the table below and set the subcode for the area to be adjusted.

Subcode	Area where the density is adjusted
0	High-density area
1	Medium-density area
2	Low-density area

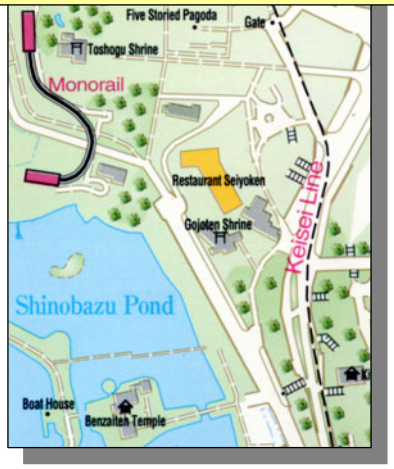
❑ Precautions after the completion of the adjustment

Nothing in particular.

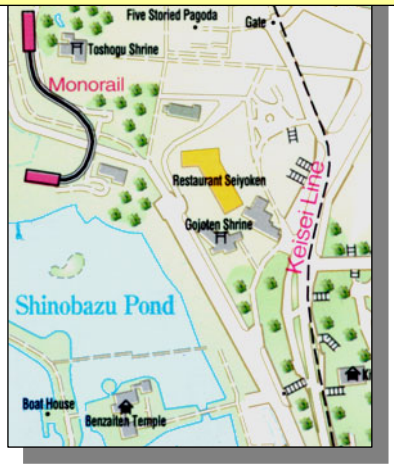
2.17 To Adjust the Image Quality Scanned from the RADF

Before the adjustment

To scan an original placed on the original glass



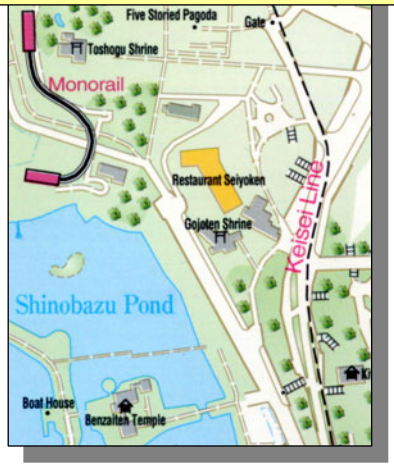
To scan an original fed from the RADF



The reproducibility of background may vary, depending on how to scan an original.

After the adjustment

To scan an original placed on the original glass



To scan an original fed from the RADF

The gap in the reproducibility of background is reduced.

❑ Explanation

The reproducibility of the background may vary, depending on the type of original, or whether the scanning is of an original placed on the original glass or one fed from the RADF (MR-3018). Adjust the reproducibility of background, while scanning an original fed from the RADF, in order to minimize the gap in the reproducibility of the background, using either method of how to scan an original.

* Before performing this adjustment, make sure that the MFP and RADF are correctly adjusted. Therefore, perform all the necessary adjustments. Only if further adjustment is still desired for the reproducibility of background, should this adjustment be performed.

❑ Procedures

* The service technician must perform all adjustments.

(1) Enter adjustment mode [05]. Change the value for code [361] or [362] to adjust the reproducibility of background, while scanning an original fed from the RADF.

Color mode	[05] code	Recommended value	Acceptable value range	Default
Full color	05-361	Set a value larger than 3 to increase the background density. Set a value smaller than 2 to decrease the background density.	0 to 4	0
Black	05-362			

* Set the value in increments of approximately 1, while checking the copy image until the optimum value is obtained. (When changing the value from the default value for the first time, it is recommended to set "2.")

* The table below shows you the correlation between the value and image quality.

Value	Advantage of image quality	Reproductivity of background
0	Default (equivalent to the one obtained when an original placed on the original glass is scanned)	---
1	Lighter background is reproduced than the one obtained when "2" is set.	Light
2	Lighter background is reproduced than the one obtained when the default value is set.	↓
3	Darker background is reproduced than the one obtained when the default value is set.	↓
4	Darker background is reproduced than the one obtained when "3" is set.	Dark

❑ Precautions after the completion of the adjustment

Correctly adjusting the MPF and RADF is a prerequisite to perform this adjustment. Therefore, perform all the necessary adjustments. Only if further adjustment is still desired for the reproducibility of background, should this adjustment be performed.

3.1 To Maintain a Steady Color Balance

Before the adjustment

The color balance varies according to a change in the environment or a lapse of time.

After the adjustment

The color balance is constantly maintained.

❑ Explanation

The color balance varies according to a change in the environment, replacement of the consumables and so forth. Periodically adjust the color reproducibility (automatic calibration), in order to constantly maintain a steady color balance on the printouts.

Automatic calibration is the basic adjustment to accurately reproduce colors on the printouts. When you would like to accurately reproduce the desired hue or when you have replaced the consumables and changed the operating conditions, perform automatic calibration to ensure the color reproducibility.

❑ Procedures

* Perform the adjustment in accordance with the procedures below.
* Only the service technician must use procedure (1).
* Both the service technician and the user can use procedure (2).

PCL6 PS3 Mac

(1) Enter adjustment mode [05]. Select code [396]. Press the [START] button.

• Image quality control will be forcibly performed to correct variations in image contrast.

After exercising image quality control, use the next procedure.

PCL6 PS3 Mac

(2) Perform automatic calibration to correct variations in image density.

*[ADMIN] is selected from among the [CALIBRATION DISPLAY LEVEL] options by default. In other words, an administrator is authorized to operate automatic calibration. But the [USER] option can also be selected to allow the user to operate it. Refer to the User Functions Guide for further information regarding how to select the [CALIBRATION DISPLAY LEVEL] option.

*Use steps (a) through (j) to perform the automatic calibration.

(a) Press the [USER FUNCTIONS] button on the Control Panel to enter the "User Functions" menu.

(b) Press the [ADMIN] button.

(c) Enter an administrator password of 6 to 10 digits. Press the [ENTER] button.

(d) Press the [GENERAL] button.

(e) Press the [CALIBRATION] button.

(f) Press the [PRINT] button.

(g) Press the [CALIBRATION] button to print out the test chart.

(h) Place the printed test chart on the original glass.

(i) Press the [START] button to perform calibration. When the calibration comes to an end, the message "Scanning and calibrating" will disappear.

(j) The message "Is a result made to reflect?" will appear. Press the [YES] button.

<Hint> During automatic calibration, the automatic image quality control option is also available. This option is particularly recommended for users who frequently adjust the image quality.

Use steps (a) to (b) to perform automatic image quality control.

(a) Enter setting mode [08]. Set "1" for code [9059].

Value for 08-9059	Image quality control operation during the automatic calibration
0	OFF (default)
1	ON (with paper selection disabled)
2	ON (with paper selection enabled)

(b) Perform automatic calibration.

*Refer to the above procedure to perform automatic calibration.

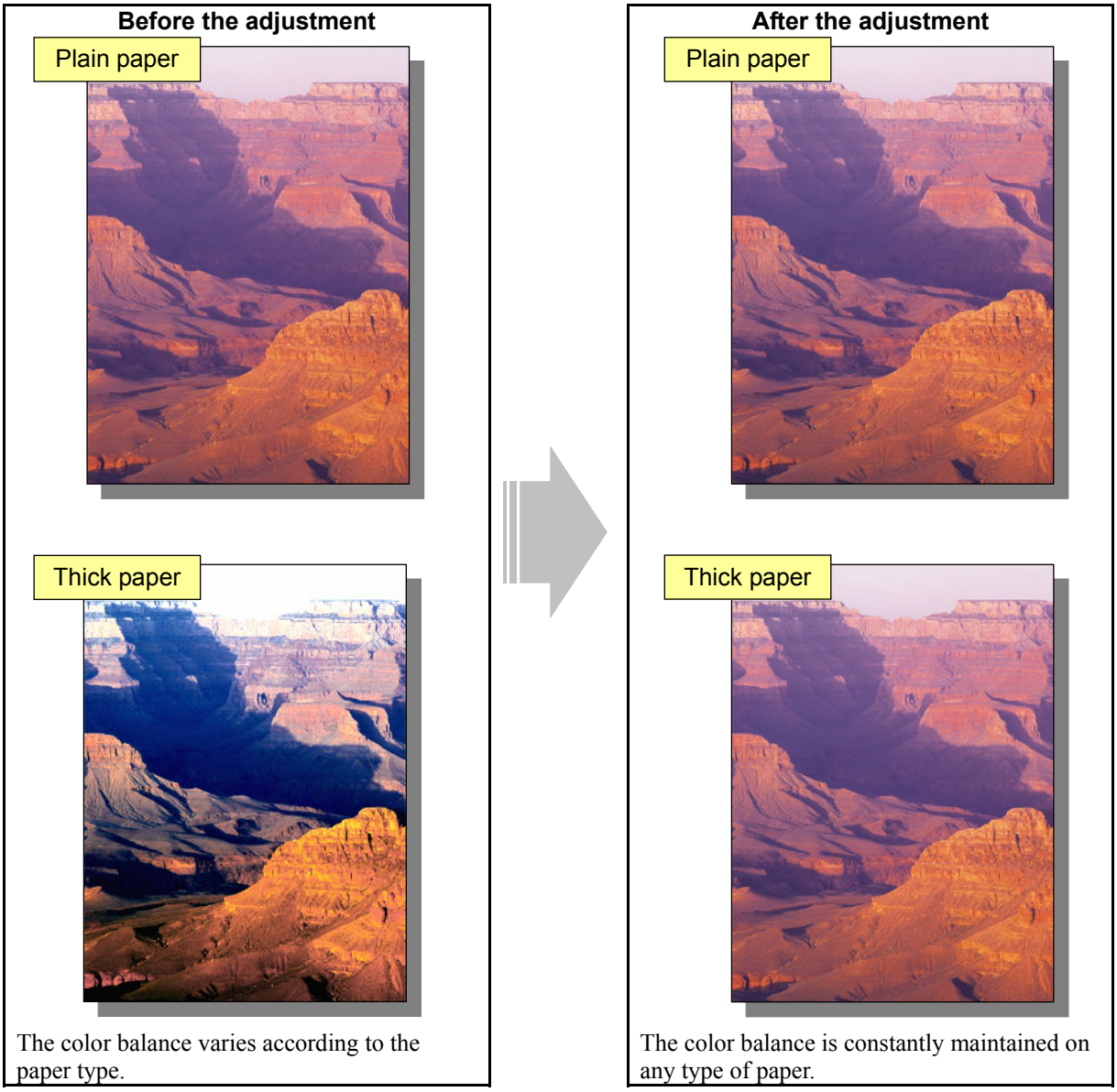
*When the [COPY] button or [PRINT] button is pressed after step (f), image quality control will be automatically performed.

❑ Precautions after the completion of the adjustment

• When image quality control is repeatedly performed, the color balance may slightly vary due to an error even in the same environment.

• During automatic calibration, when the automatic image quality control option is selected (procedure (2) <Hint>), the processing time will increase by approximately 30 seconds, when compared to before when the automatic image quality control option is selected.

3.2 To Maintain a Steady Color Balance on Thick Paper or Special Paper


Before the adjustment
Plain paper
Thick paper
The color balance varies according to the paper type.
After the adjustment
Plain paper
Thick paper
The color balance is constantly maintained on any type of paper.

❑ Explanation

The color balance varies according to a change in the environment, replacement of the consumables and so forth. The amount of the change varies significantly, according to the paper type. Periodically adjust the color reproducibility (automatic calibration) corresponding to the paper type, in order to constantly maintain a steady color balance on any type of paper.

Automatic calibration is the basic adjustment to accurately reproduce colors on the printouts. When you would like to accurately reproduce the desired hue or when you have replaced the consumables and changed the operating conditions, perform automatic calibration to ensure the color reproducibility.

❑ Procedures

* Perform the adjustment in accordance with the procedures below.
* Only the service technician must use procedure (1).
* Both the service technician and the user can use procedure (2).

PCL6 PS3 Mac

(1) Enter setting mode [08]. Set "2" for code [9059].

• During automatic calibration, the paper type can be selected and image quality control will be automatically performed.

Value for 08-9059	Image quality control operation during the automatic calibration
0	OFF (default)
1	ON (with paper selection disabled)
2	ON (with paper selection enabled)

After setting the value, use the next procedure.

PCL6 PS3 Mac

(2) Perform automatic calibration to correct variations in image density.

*[ADMIN] is selected from among the [CALIBRATION DISPLAY LEVEL] options by default. In other words, an administrator is authorized to operate the automatic calibration. But the [USER] option can also be selected to allow the user to operate it. Refer to the User Functions Guide for further information regarding how to select the [CALIBRATION DISPLAY LEVEL] option.

*Use steps (a) through (l) to perform the automatic calibration.

(a) Press the [USER FUNCTIONS] button on the Control Panel to enter the "User Functions" menu.

(b) Press the [ADMIN] button.

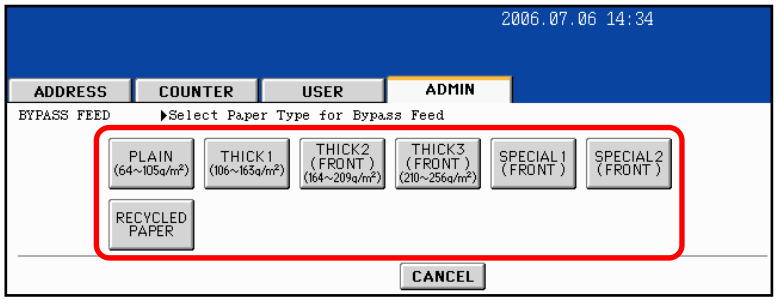
(c) Enter an administrator password of 6 to 10 digits. Press the [ENTER] button.

(d) Press the [GENERAL] button.

(e) Press the [CALIBRATION] button.

(f) Press the [PRINT] button.

(g) Press the button for the paper type to be corrected.



*After the paper type is selected, image quality control is automatically performed.

(h) Load A4/LT-sized paper selected at step (g).

(i) Press the [CALIBRATION] button to print out the test chart.

(j) Place the printed test chart on the original glass.

(k) Press the [START] button to perform calibration. When the calibration comes to an end, the message "Scanning and calibrating" will disappear.

(l) The message "Is a result made to reflect?" will appear. Press the [YES] button.

❑ Precautions after the completion of the adjustment

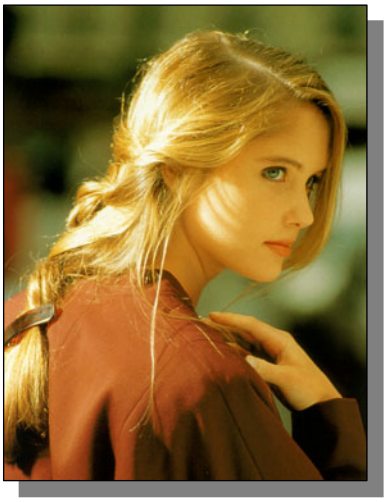
When image quality control is automatically performed during automatic calibration, the processing time will increase by approximately 30 seconds, when compared to before when the automatic image quality control option is selected.

3.3 To Obtain the Desired Color Balance

Before the adjustment

The natural color balance is obtained.

After the adjustment



The desired color balance is obtained.
(Ex. Yellowness is enhanced.)

❑ Explanation

If you would like to change the color balance or darkness of the printouts and reproducibility of halftones in accordance with a type of original or the user's requirements, change the "Image Quality Type" option on the printer driver or adjust the color balance.

❑ Procedures

* Perform the adjustment in accordance with the procedures below.
* Both the service technician and the user can use procedures (1) and (2).
* Only the service technician must use procedure (3).

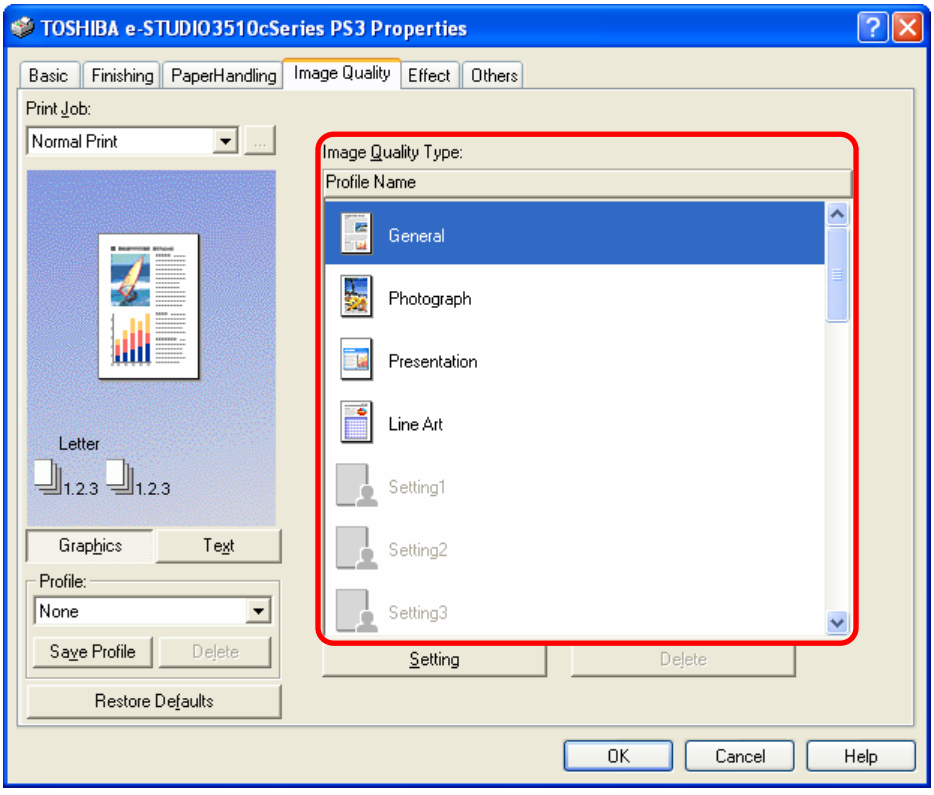
(1) Change the "Image Quality Type" option on the printer driver.

*This adjustment will be effective, only if a file created on a general application, such as Microsoft Office, is printed in PostScript (PS3 or Macintosh). It may not be effective, if a file created on a graphic application (e.g. Illustrator) or a DTP application (e.g. QuarkXPress) is printed, or a PDF file created on these applications is printed using the C, M, Y and K toners. Unmark the "Use PostScript Passthrough" checkbox in the "PostScript Setting" options in the "Others" tab. The "Image Quality Type" option will be effective, if printing on Windows (PS3) is performed (but not on Macintosh) or if a file created on the above applications is printed. However, the color balance may be changed, and also the image quality may be diminished, depending on the type of file.

For Windows

PCL6 PS3 * This adjustment will have an effect only on Auto or Color mode printing.

Open the property page of the printer driver. Change the "Image Quality Type" option in the "Image Quality" tab.



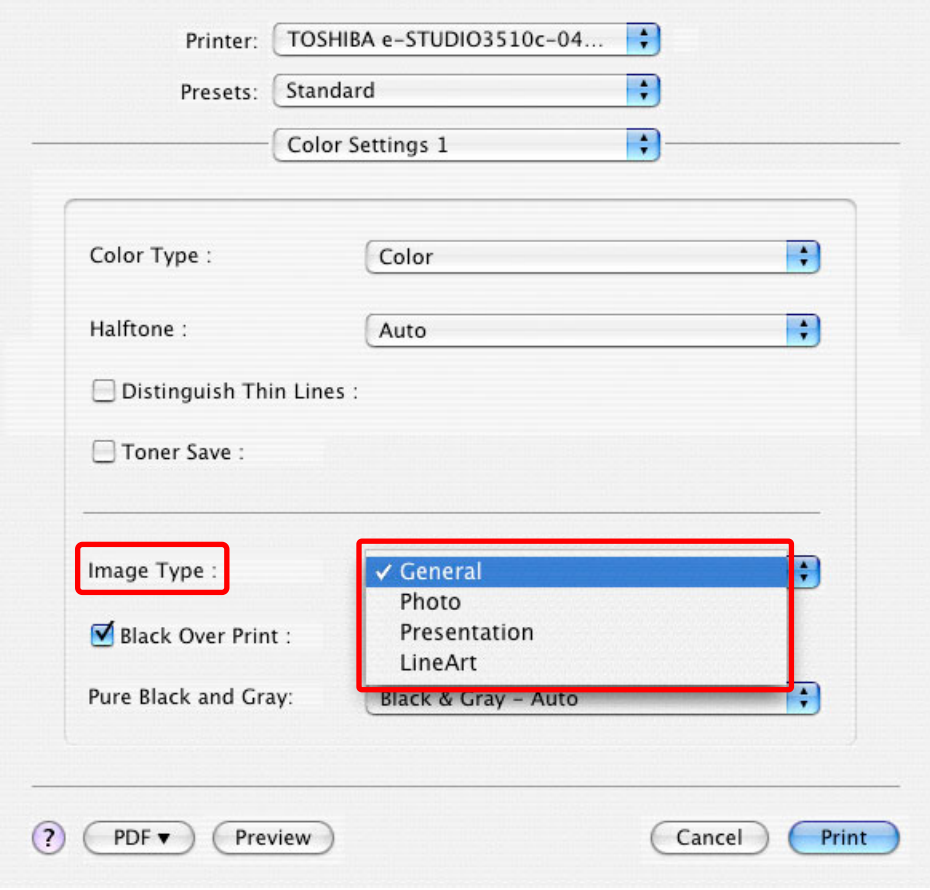
For Macintosh

Mac * This adjustment will have an effect only on full-color printing.

Open the print dialog box. Change the "Image Type" option.

* The menu to select varies according to the operating system. Refer to the table below and select the menu.

OS	Menu
8.6 / 9.x	"Color Settings 2" ⇨ "Image Type"
10.2.x	"Printer Features" ⇨ "Feature Sets: Color settings 2" ⇨ "Image Type"
10.3.x / 10.4.x	"Color Settings 1" ⇨ "Image Type"



* The Image Quality Type options feature the following:

- General: "General" is the best-rounded option to offer fine printouts of any type of original, including text, photographs and graphics. It is suitable for printing using word-processing and spreadsheet software. If "General" is selected, "Smooth," which is intended to improve the reproducibility of gradations, will be applied to graphics and images, while "Detail," which is intended to improve the resolving power, will be applied to text, from among the "Halftone" options (screen).

- Photograph: "Photograph" is intended to improve the reproducibility of halftones, such as photos and gradational images. This provides the color balance closely matching the one on the monitor with sRGB selected as a color space. If "Photograph" is selected, "Smooth," which is intended to improve the reproducibility of gradations, will be applied to graphics and images, while "Detail," which is intended to improve the resolving power, will be applied to text, from among the "Halftone" options.

- Presentation: "Presentation" is intended to improve to the reproducibility of vivid colors. It is suitable for printing presentation materials and graphics, which require sharp-contrast images. The color balance this option provides does not match the one on the monitor, because priority is given to printing in highly vivid colors. If "Presentation" is selected, "Smooth," which is intended to improve the reproducibility of gradations, will be applied to graphics and images, while "Detail," which is intended to improve the resolving power, will be applied to text, " from among the "Halftone" options.

- Line Art: "Line Art" is intended to reproduce thin lines clearly without jaggies visible on the printout. It is suitable for printing out line drawings. The color reproduction this option provides is the same as the one the Presentation option provides. But if "LineArt" is selected, a special operation is provided to reproduce thin lines more clearly. If "Line Art" is selected, "Detail," which is intended to print halftones in detail (with the high frequency), will be applied to graphics, images and text, from among the "Halftone" options.

After changing the option on the printer driver, print and check the print image quality.
If further image quality adjustments are still necessary, use the next procedure.

(2) Change the "Color Balance" option, the "Brightness" or "Saturation" option on the printer driver.

For Windows

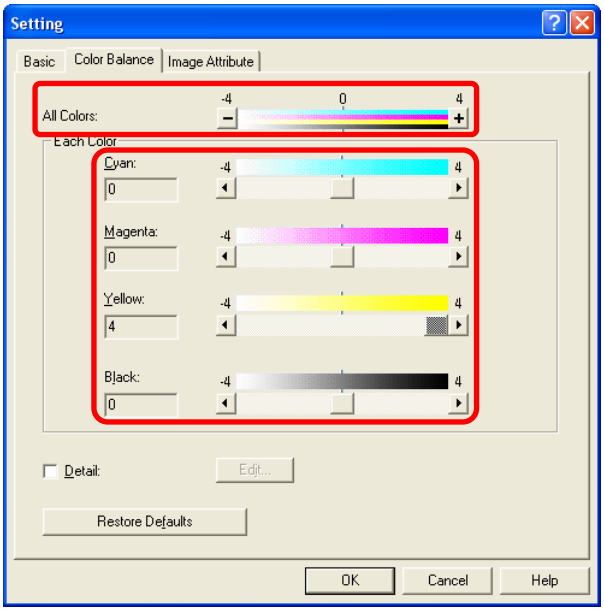
PCL6 PS3 * This adjustment will have an effect only on Auto or Color mode printing.

Open the property page of the printer driver. Press the [Image Type Quality] button in the "Image Quality" tab.

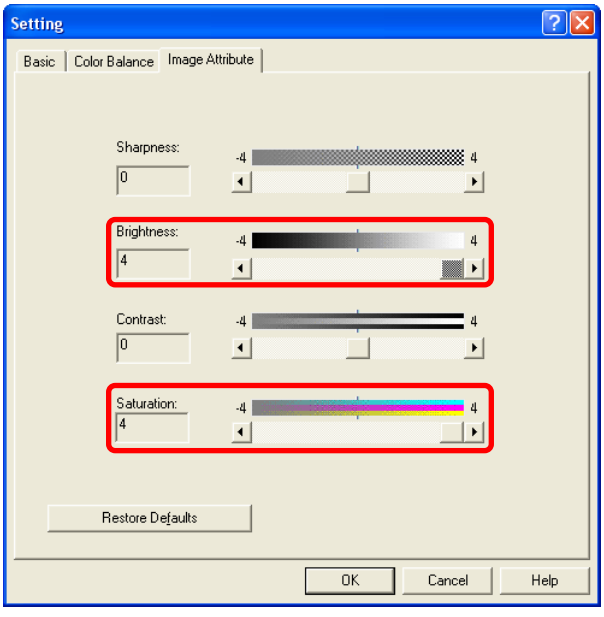
Change the option in the "Color Balance" or "Image Attribute" tab.

* Initially, change the value by 4 steps, while checking the printouts until the optimum value is obtained.

• "Color Balance" tab: Change the "All Colors" or "Each Color" option



• "Image Attribute" tab: Change the "Brightness" or "Saturation" option.



For Macintosh

Mac * This adjustment will have an effect only on full-color printing.

Open the print dialog box. Change the "Color Balance" option, the "Brightness" or "Saturation" option.

* The menu to select varies according to the operating system. Refer to the table below and select the menu.

OS	Menu
8.6 / 9.x	"Color Settings 3" ⇨ "Color Balance" "Color Settings 4" ⇨ "Brightness" or "Saturation"
10.2.x	"Printer Features" ⇨ "Feature Sets: Color settings 3" ⇨ "Color Balance" "Printer Features" ⇨ "Feature Sets: Color settings 4" ⇨ "Brightness" or "Saturation"
10.3.x / 10.4.x	"Color Settings 2" ⇨ "Color Balance," "Brightness" or "Saturation"

* Initially, change the value by 4 steps, while checking the printouts until the optimum value is obtained.

After changing the option on the printer driver, print and check the print image quality.

If further image quality adjustments are still necessary, the service technician must use the next procedure.

PCL6 PS3 Mac * This adjustment will have an effect only on Auto or Color mode printing.

(3) Enter adjustment mode [05]. Change the values for codes [8050 to 8065] to adjust the color density.

• Adjust the value for [05] code corresponding to the print option to be applied (PDL and Halftone).

Ex.: • When printing on Windows is performed with the following options selected: PCL6, Image Quality Type = General, Halftone = Auto

> Text area

Change the values for Y: 05-8062, M: 05-8063, C: 05-0864 and K: 05-8065.

> Graphic and image area

Change the values for Y: 05-8058, M: 05-8059, C: 05-8060 and K: 05-8061.

• When printing on Macintosh is performed with the following option selected: Image Type = Photograph, Halftone = Smooth

> Change the values for Y: 05-8050, M: 05-8051, C: 05-8052 and K: 05-8053.

* Printing on Macintosh is performed in PostScript. (See the "PS3" row in the table below.)

Color to adjust	PDL	Halftone	[05] code	Subcode	Recommended value	Acceptable value range	Default
Y (Yellow)	PCL5c	Smooth	05-8058	0/1/2	Set a value larger than 128 to increase the density. Set a value smaller than 128 to decrease the density.	0 to 255	128
		Detail	05-8062	0/1/2			
	PS3	Smooth	05-8050	0/1/2			
		Detail	05-8054	0/1/2			
M (Magenta)	PCL5c	Smooth	05-8059	0/1/2			
		Detail	05-8063	0/1/2			
	PS3	Smooth	05-8051	0/1/2			
		Detail	05-8055	0/1/2			
C (Cyan)	PCL5c	Smooth	05-8060	0/1/2			
		Detail	05-8064	0/1/2			
	PS3	Smooth	05-8052	0/1/2			
		Detail	05-8056	0/1/2			
K (Black)	PCL5c	Smooth	05-8061	0/1/2			
		Detail	05-8065	0/1/2			
	PS3	Smooth	05-8053	0/1/2			
		Detail	05-8057	0/1/2			

* Set the value in increments of approximately 20, while checking the printouts until the optimum value is obtained.

* "Halftone" refers to how halftones are printed. Two options are available: "Smooth" which is intended to improve the reproducibility of gradation and "Detail" which is intended to print halftones in details (with the high frequency).
The halftone option to be applied in printing can be selected from among the "Halftone" options on the printer driver (Windows) or in the print dialog box (Macintosh).
"Auto" is selected from among the "Apply to" options by default. It is intended to automatically select "Smooth" or "Detail" in accordance with "Apply to" of the halftone option, the selected "Color" and "Image Quality Type" options, as described in the table below.

Apply to	"Color" and "Image Quality Type" options					
	Auto/Color				Black and White	Twin Color
	General	Photograph	Presentation	Line Art		
Text	Detail	Detail	Detail	Detail	Detail	Detail
Graphic (Illustration, line, etc.)	Smooth	Smooth	Smooth	Detail	Detail	Smooth
Image (Photograph, etc.)	Smooth	Smooth	Smooth	Detail	Smooth	Smooth

* The subcode varies according to the area where the density is adjusted. Refer to the table below and set the subcode for the area to be adjusted.

Subcode	Area where the density is adjusted
0	Low-density area
1	Medium-density area
2	High-density area

<Note>

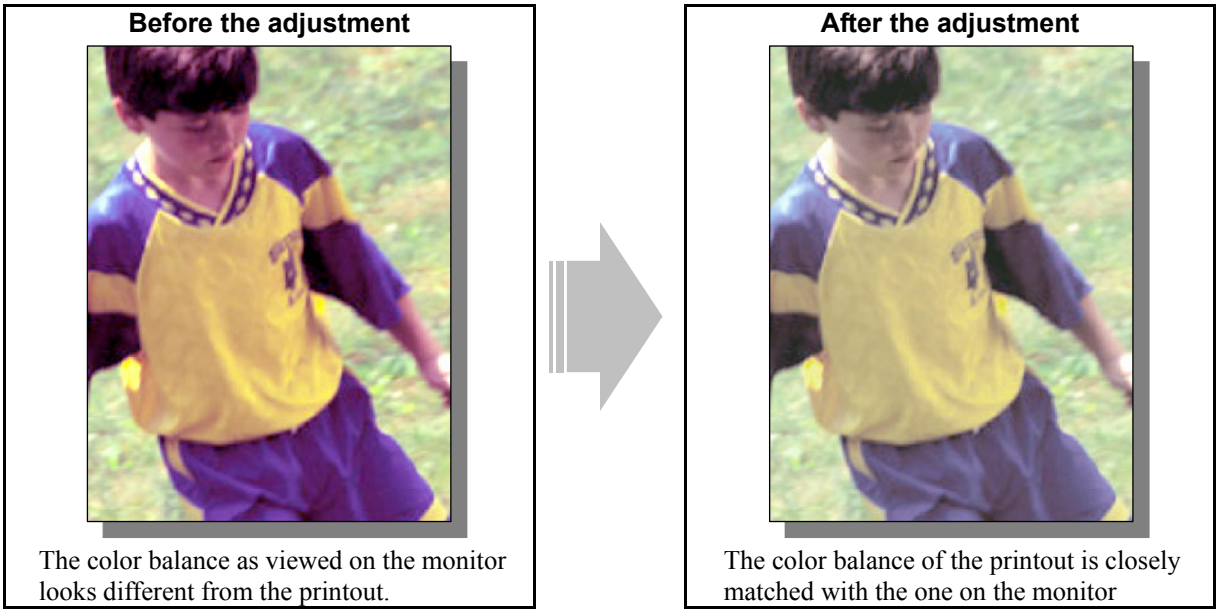
- This adjustment changes the values set in the MFP. Therefore, it will affect every user who uses the printer by connecting it to the MFP. After the adjustment, the values changed will be applied to all printouts for the "Image Quality Type" and "Halftone" options. (For instance, if the value for [05] code for PCL6 and Smooth is changed, it will be applied to printing performed with PCL6 and Halftone = "Smooth" (or "Auto") selected.) Carefully perform the adjustment, being aware that the image quality of all future printouts will be changed, when printing out originals other than the one that is used for the adjustment.

- This code is commonly used in the Color mode and the Twin-color mode. After the adjustment, the values changed will be also applied to the image quality in the Twin-color mode. When adjusting the image quality in the Color mode, carefully perform the adjustment, being aware that the image quality of all future printouts will be changed, when performing printing in the Twin-color mode.

❑ Precautions after the completion of the adjustment

Nothing in particular.

3.4 To Closely Match the Color Balance on the Monitor


Before the adjustment
The color balance as viewed on the monitor looks different from the printout.
After the adjustment
The color balance of the printout is closely matched with the one on the monitor

❑ Explanation

The color balance on the printouts is initially programmed to provide the maximum color saturation within the range of colors reproducible in printing. In general, colors, which can be reproduced, vary, depending on whether they are reproduced on the printout or on the monitor (or depending on whether they are reproduced in "ink" or with the "light"). Consequently, the color balance on the printout cannot be perfectly matched with the one on the monitor. Change the "Image Quality Type" option, in order to closely match the color balance on the printout with the one on the monitor, at a user's request.

* This adjustment will be effective in closely matching the color balance on the printout with the one on the monitor, if the sRGB is selected as a color space. Therefore, remember that it may not be matched with the color balance on the monitor, which does not support sRGB or if a color space other than sRGB is selected. On commercially available monitors, sRGB is not selected as a color space by default.

❑ Procedures

*Both the service technician and the user can perform all adjustments.

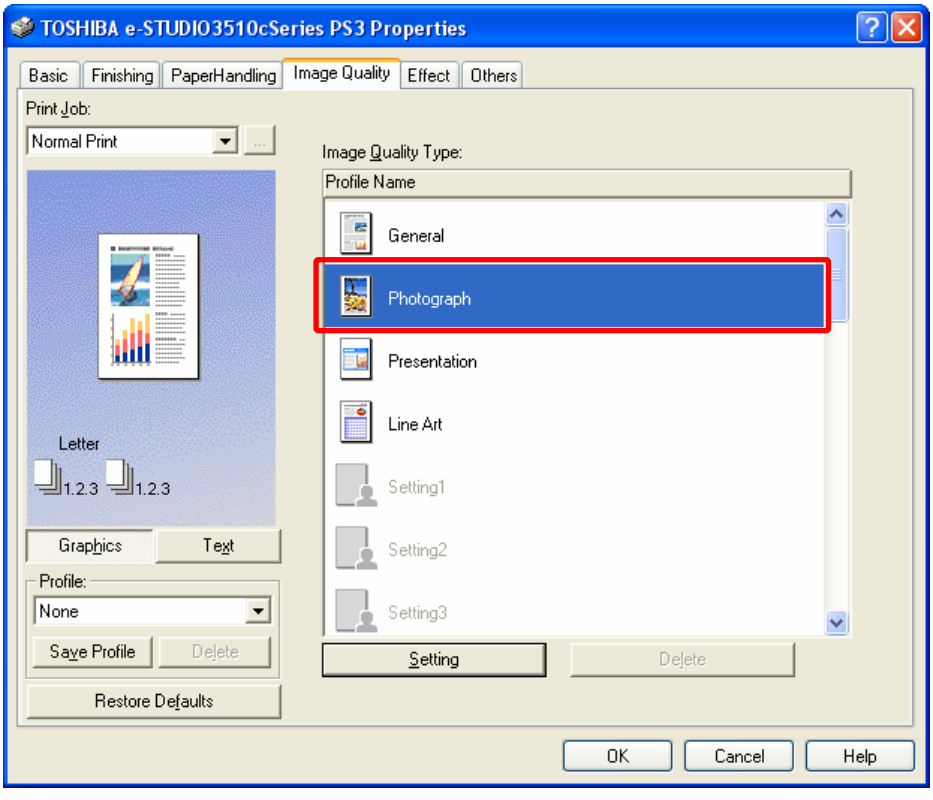
(1) Select "Photograph" from among the "Image Quality Type" options.

*This adjustment will be effective, only if a file created on a general application, such as Microsoft Office, is printed in PostScript (PS3 or Macintosh). It may not be effective, if a file created on a graphic application (e.g. Illustrator) or a DTP application (e.g. QuarkXPress) is printed, or a PDF file created on these applications is printed using the C, M, Y and K toners. Unmark the "Use PostScript Passthrough" checkbox in the "PostScript Setting" options in the "Others" tab. The "Image Quality Type" option will be effective, if printing on Windows (PS3) is performed (but not on Macintosh) or if a file created on the above applications is printed. However, the color balance may be changed, and also the image quality may be diminished, depending on the type of file.

For Windows

PCL5c PS3 * This adjustment will have an effect only on Auto or Color mode printing.

Open the property page of the printer driver. Select "Photograph" from among the "Image Quality Type" options.



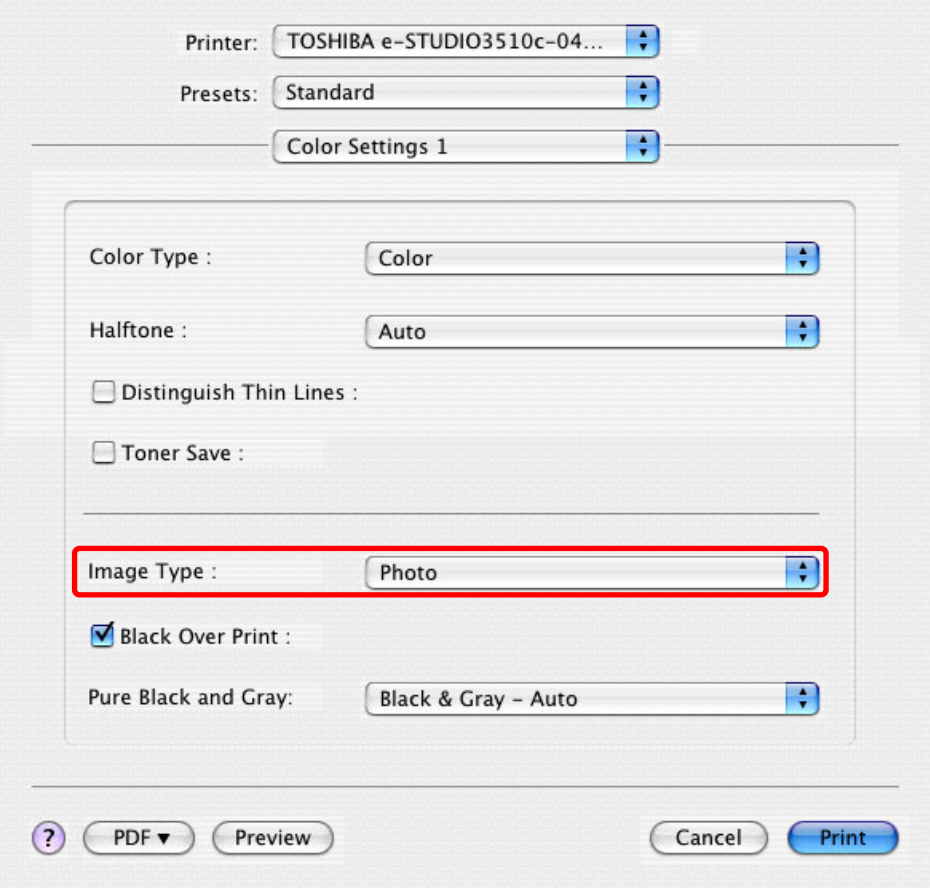
For Macintosh

Mac * This adjustment will have an effect only on full-color printing

Open the print dialog box. Select "Photograph" from among the "Image Type" options.

* The menu to select varies according to the operating system. Refer to the table below and select the menu.

OS	Menu
8.6 / 9.x	"Color Settings 2" ⇨ "Image Type"
10.2.x	"Printer Features" ⇨ "Feature Sets: Color settings 2" ⇨ "Image Type"
10.3.x / 10.4.x	"Color Settings 1" ⇨ "Image Type"



❑ Precautions after the completion of the adjustment

Nothing in particular.

❑ Remarks

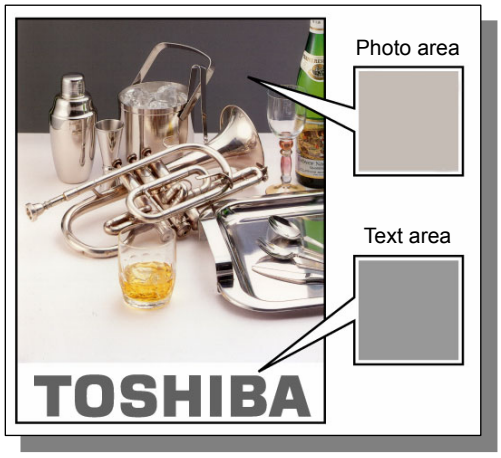
- Setting a color space to sRGB is a prerequisite to maximize the effectiveness of this adjustment. Therefore, if the monitor does not support sRGB or if color management cannot be performed, the effectiveness of the adjustment may be significantly lost.

- In general, it is impossible to reproduce color saturation closely matching the true colors, as viewed on the monitor, because the range of colors reproducible in toner colors is narrower than the one on the monitor.

3.5 To Maintain a Uniform Gray Hue

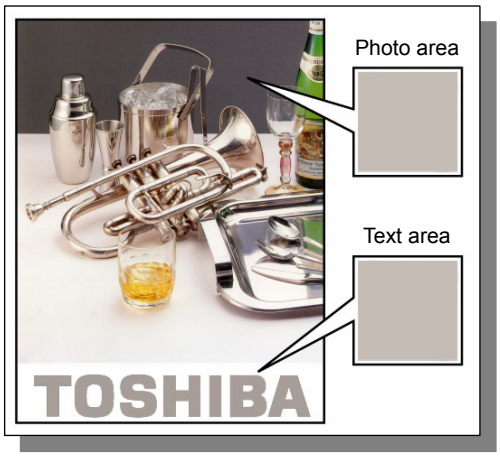
(To maintain Consistency in Gray among Text, Photos and Graphics)

Before the adjustment



How gray is reproduced varies depending on the type of original. As a result, there are variations in gray.

After the adjustment



All color toners are used to reproduce gray. As a result, consistency is maintained in the gray hue.

❑ Explanation

For printing, only the K toner is usually used to reproduce gray areas of drawing data, lines and text. On the other hand, all color toners (C, M, Y and K) are used to reproduce gray areas of image data, such as BMP, GIF, JPEG and TIFF. This provides a deeper gray on the printouts. Change the option on the printer driver, in order to maintain consistency in the gray hue between the drawing data and the image data.

❑ Procedures

*Both the service technician and the user can perform all adjustments.

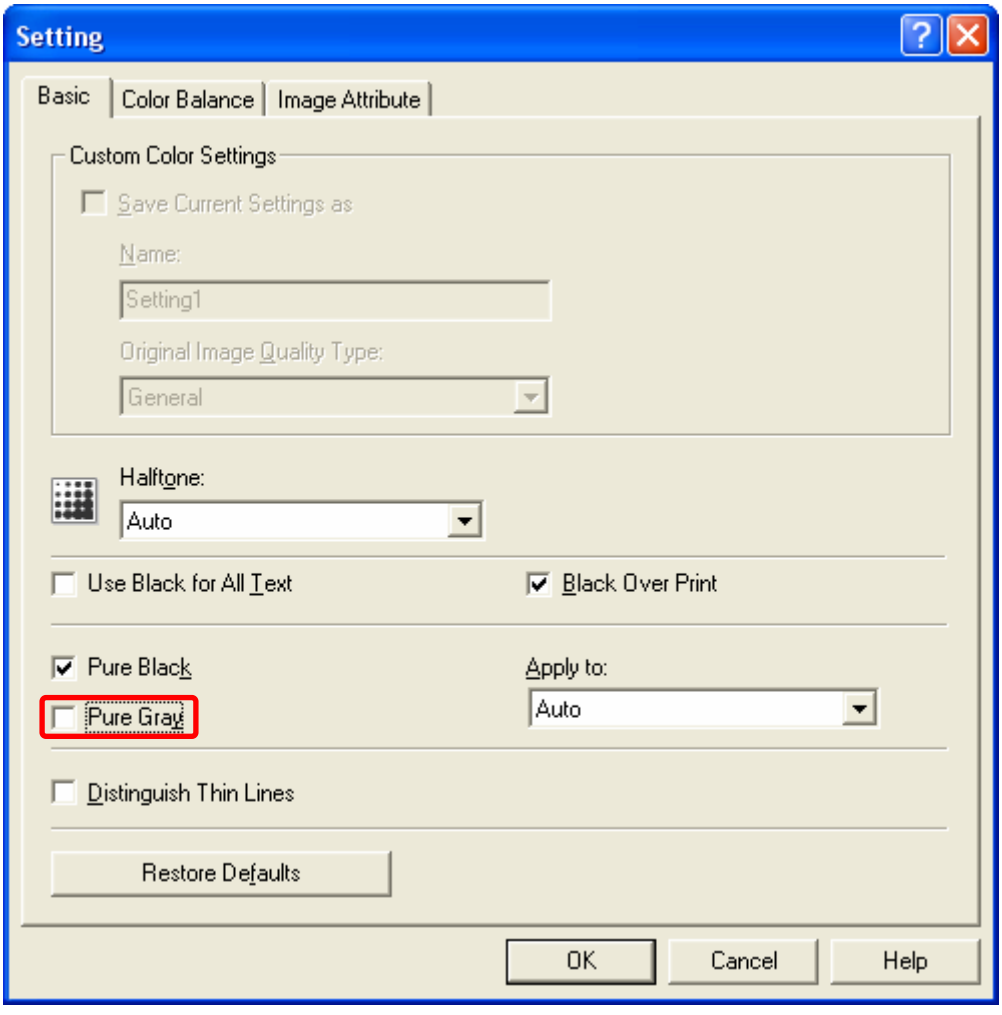
(1) Change the "Pure Gray" option on the printer driver.
("Pure Gray" allows gray areas to always be reproduced using all color toners (C, M, Y and K) without changing the hue of color areas.)

*This adjustment will be effective, only if a file created on a general application, such as Microsoft Office, is printed. It may not be effective, if a file created on a graphic application (e.g. Illustrator) or a DTP application (e.g. QuarkXPress) is printed, or a PDF file created on these applications is printed.

For Windows

PCL5c PS3 * This adjustment will have an effect only on Auto or Color mode printing.

Open the property page of the printer driver. Press the [Setting] button in the "Image Quality" tab.
Unmark the "Pure Gray" checkbox in the "Basic" tab.



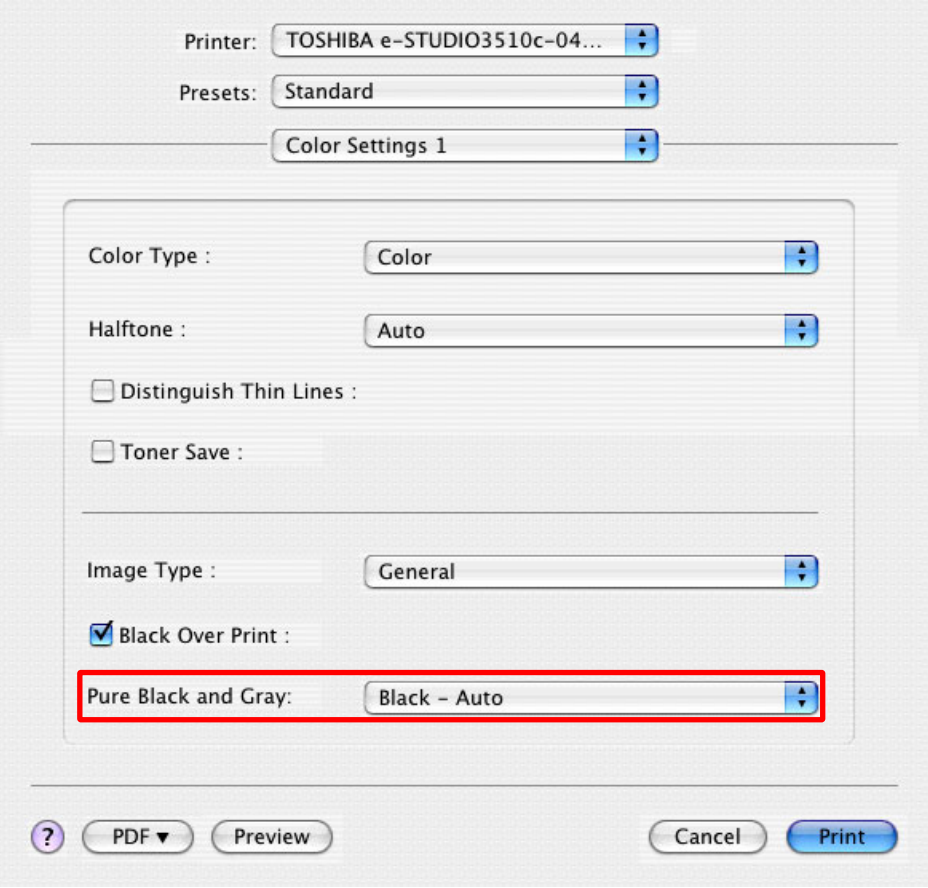
For Macintosh

Mac * This adjustment will have an effect only on full-color printing.

Open the print dialog box. Select "Black - Auto" from among the "Pure Black and Gray" options.

* The menu to select varies according to the operating system. Refer to the table below and select the menu.

OS	Menu
8.6 / 9.x	"Color Settings 2" ⇨ "Pure Black and Gray"
10.2.x	"Printer Features" ⇨ "Feature Sets: Color settings 2" ⇨ "Pure Black and Gray"
10.3.x / 10.4.x	"Color Settings 1" ⇨ "Pure Black and Gray"



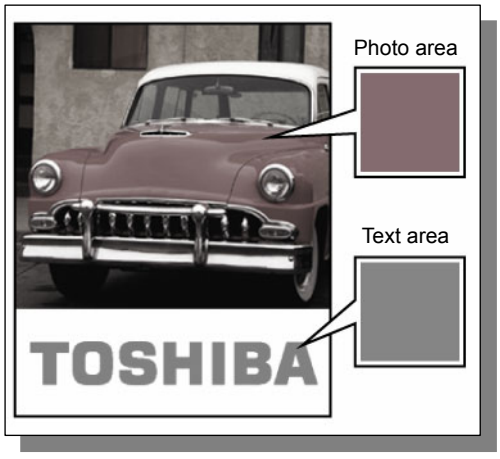
❑ Precautions after the completion of the adjustment

The adjustment allows gray areas always to be reproduced using all color toners (C, M, Y and K). As a result, undesired colors may look blended, depending on the print image. Therefore, carefully perform the adjustment, while checking the printouts.

3.6 To Use Only the Black Toner to Reproduce Gray Areas

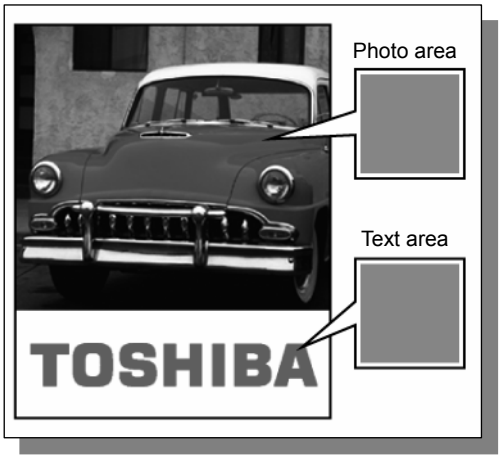
(To use only the black toner to reproduce black-and-white photos or gradational images)

Before the adjustment



Using all color toners to reproduce black-and-white photo images (bitmap data) blends undesired colors in the image.

After the adjustment



Using only the black toner to reproduce black-and-white photo images can diminish undesired colors.

❑ Explanation

For printing, only the K toner is usually used to reproduce gray areas of drawing data, lines and text. On the other hand, all color toners (C, M, Y and K) are used to reproduce gray areas of image data, such as BMP, GIF, JPEG and TIFF. This provides a deeper gray on the printouts.

The following are examples when image data are reproduced using C, M, Y and K:

- A gray-scale or black-and-white photo is pasted in photo editing software such as Imaging and Paint Shop Pro, in Internet Explorer, word-processing or spreadsheet software.
- A semi-transparent gray color or gradient of gray is used in the Format AutoShape dialog box on Microsoft Office.

  (The gray area printed out as raster data in the same manner as a photo image is reproduced using C, M and Y toners, or C, M, Y and K toners.)

Change the option on the printer driver, in order to use only the black toner to reproduce the gray area where C, M, Y and K are used as described above.

❑ Procedures

*Both the service technician and the user can perform all adjustments.

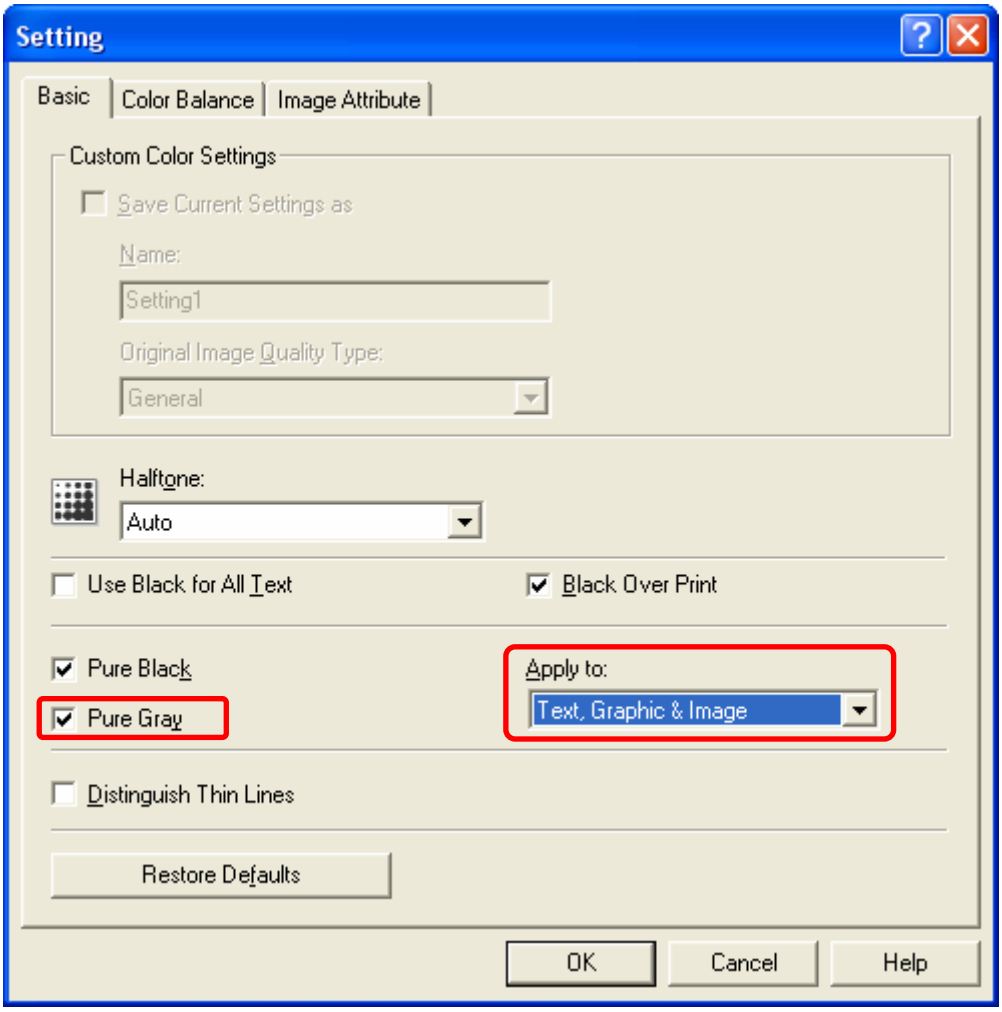
(1) Mark the "Pure Gray" checkbox on the printer driver. Select "Text, Graphic & Image" from among the "Apply to" options. ("Pure Gray" allows gray areas to always be reproduced using only the K toner without changing the hue of color areas.)

* This adjustment will be effective, only if a file created on a general application, such as Microsoft Office, is printed. It may not be effective, if a file created on a graphic application (e.g. Illustrator) or a DTP application (e.g. QuarkXPress) is printed, or a PDF file created on these applications is printed.

For Windows

PCL6 PS3 * This adjustment will have an effect only on Auto or Color mode printing.

Open the property page of the printer driver. Press the [Setting] button in the "Image Quality" tab.
Mark the "Pure Gray" checkbox in the "Basic" tab. Select "Text, Graphic & Image" from among the "Apply to" options.



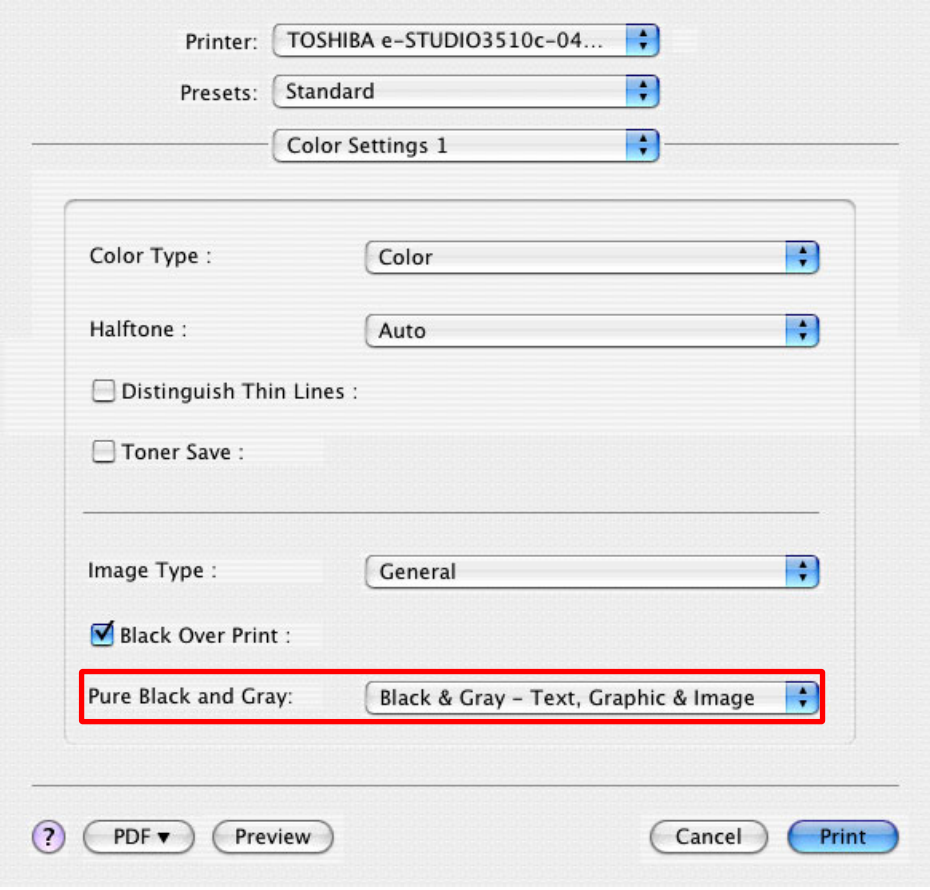
For Macintosh

Mac * This adjustment will have an effect only on full-color printing.

Open the print dialog box. Select "Black & Gray - Text, Graphic & Image" from among the "Pure Black and Gray" options.

* The menu to select varies according to the operating system. Refer to the table below and select the menu.

OS	Menu
8.6 / 9.x	"Color Settings 2" ⇨ "Pure Black and Gray"
10.2.x	"Printer Features" ⇨ "Feature Sets: Color settings 2" ⇨ "Pure Black and Gray"
10.3.x / 10.4.x	"Color Settings 1" ⇨ "Pure Black and Gray"



❑ Precautions after the completion of the adjustment

The adjustment allows gray areas to always be reproduced using only the K toner. As a result, color photos may look more grained. Therefore, carefully perform the adjustment, while checking the printouts.

3.7 To Easily Adjust the Overall Brightness

Before the adjustment

The image is printed with a natural brightness.
(Default printing)

After the adjustment

A darker print image is obtained.

After the adjustment

A brighter print image is obtained.

❑ Explanation

The brightness of the print image can be easily adjusted by changing the "Brightness" setting on the printer driver.

❑ Procedures

*Both the service technician and the user can perform all adjustments.

(1) Change the "Brightness" option on the printer driver.

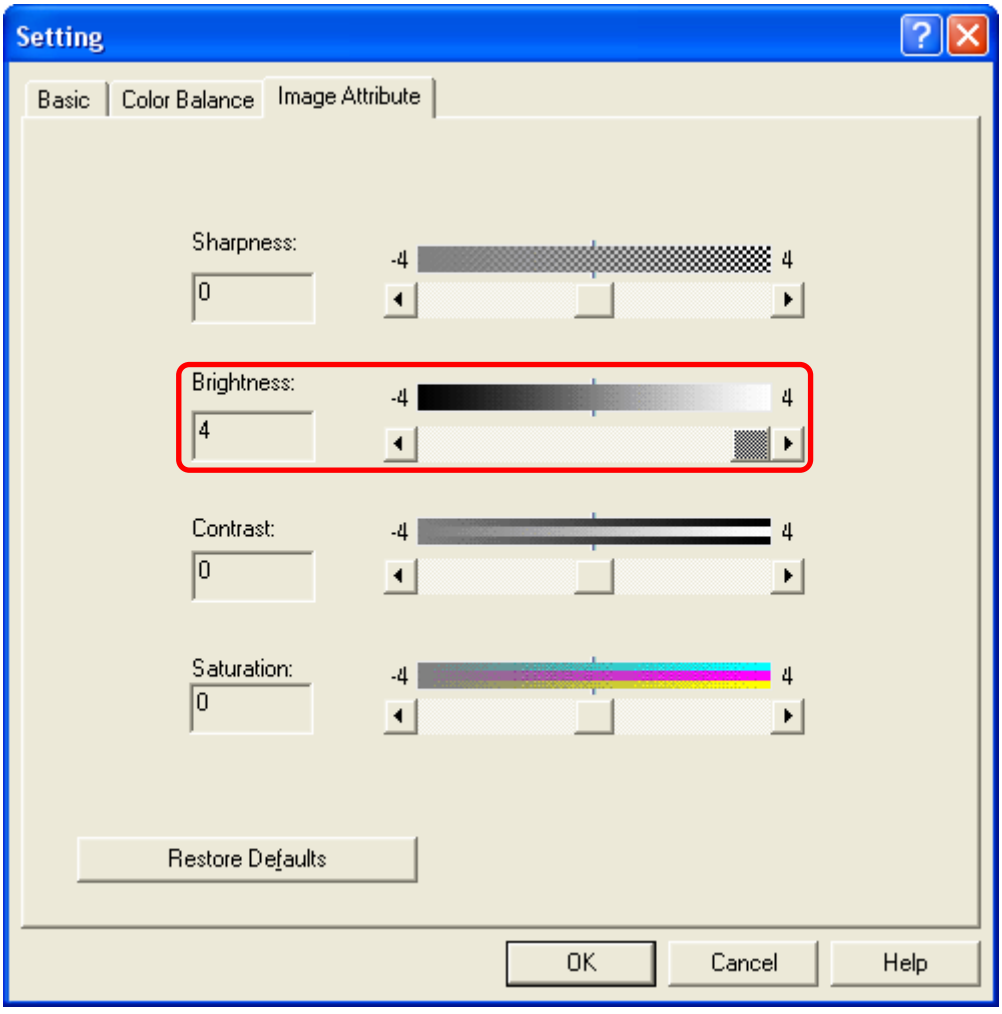
• Select the desired value for brightness on a scale of -4 (Darkest) to 4 (Lightest).

For Windows

PCL5c PS3 * This adjustment will have an effect only on Auto or Color mode printing.

Open the property page of the printer driver. Press the [Setting] button in the "Image Quality" tab.

Change the "Brightness" option in the "Image Attribute" tab.



For Macintosh

Mac * This adjustment will have an effect only on full-color printing.

Open the print dialog box. Change the "Brightness" option.

* The menu to select varies according to the operating system. Refer to the table below and select the menu.

OS	Menu
8.6 / 9.x	"Color Settings 4" ⇨ "Brightness"
10.2.x	"Printer Features" ⇨ "Feature Sets: Color settings 4" ⇨ "Brightness"
10.3.x / 10.4.x	"Color Settings 2" ⇨ "Brightness"

❑ Precautions after the completion of the adjustment

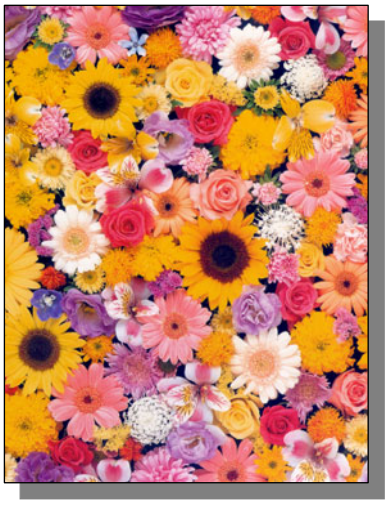
Nothing in particular.

❑ Remarks

The brightness adjustment does not affect black text (CMY = 100%, K = 100% or RGB = 0%).

3.8 To Adjust the Overall Saturation

Before the adjustment

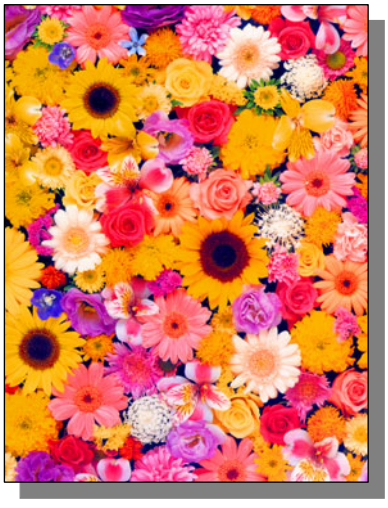


The image is printed with a natural saturation.
(Default printing)

After the adjustment

The saturation is decreased.

After the adjustment



The saturation is increased.

❑ Explanation

The saturation of the print image can be easily adjusted by changing the "Saturation" option on the printer driver.

❑ Procedures

*Both the service technician and the user can use procedure (1).

*Only if the saturation of R (Red) is still insufficient even after procedure (1) has been used, must the service technician use procedure (2).

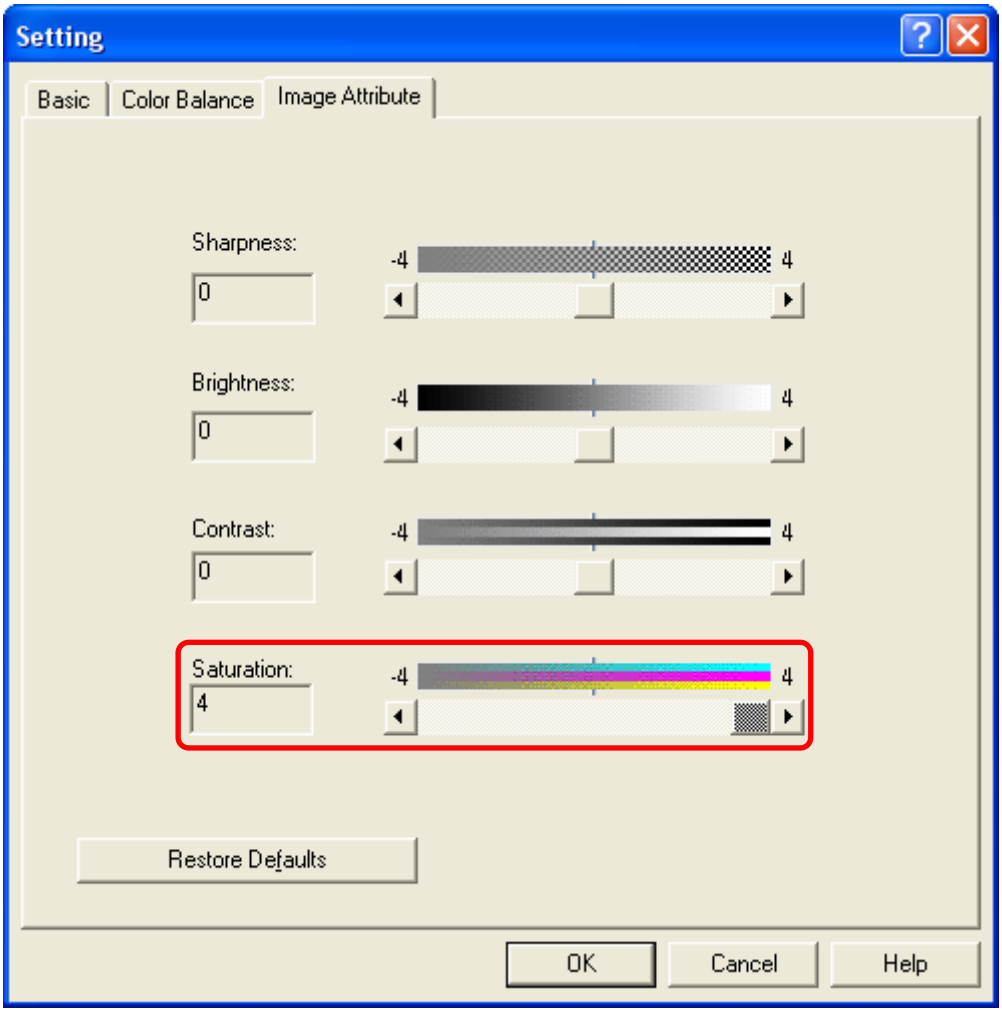
(1) Change the "Saturation" option on the printer driver.

• Select the desired value for saturation on a scale of -4 (Palest) to 4 (Brightest).

For Windows

PCL6 PS3 * This adjustment will have an effect only on Auto or Color mode printing.

Open the property page of the printer driver. Press the [Setting] button in the "Image Quality" tab.
Change the "Saturation" option in the "Image Attribute" tab.



For Macintosh

Mac * This adjustment will have an effect only on full-color printing.

Open the print dialog box. Change the "Saturation" option.

* The menu to select varies according to the operating system. Refer to the table below and select the menu.

OS	Menu
8.6 / 9.x	"Color Settings 4" ⇨ "Saturation"
10.2.x	"Printer Features" ⇨ "Feature Sets: Color settings 4" ⇨ "Saturation"
10.3.x / 10.4.x	"Color Settings 2" ⇨ "Saturation"

After changing the option on the printer driver, print and check the print image quality.

Only if the saturation of R (Red) is still insufficient even after all the above procedures have been used, must the service technician use the next procedure.

(5) Enter adjustment mode [05]. Change the value for code [2905] to adjust the transfer (1st transfer) roller bias output.
(Adjust the offset voltage of the transfer roller bias for C (Cyan) and K (Black) so as to increase the density of R (Red).)

• The code to use varies according to the paper type and color to adjust. Adjust the value for the subcode corresponding to the color for which you would like to improve the image quality. Set the value within a range of "2" to "5" to obtain the highest density of R (Red).

Paper type	Color to adjust	[05] code	Subcode	Recommended value	Acceptable value range	Default
Plain paper	C (Cyan)	05-2905	2	2 to 5	0 to 10	5
	K (Black)		3			
Thick	C (Cyan)		8			
	K (Black)		9			

*Never change the values for subcodes other than the above. Otherwise, it may cause a loss in MFP performance, including degradation in the image quality.

<Note>
- The adjustment may possibly decrease the density of G (Green), B (Blue) and K (Black) extremely. Therefore, carefully perform the adjustment, while checking the printout.
- Unless this adjustment changes the density of R (Red), return the values to the default (set value: 5).
- This adjustment may affect not only the printouts but also every type of image quality such as the copy image. Therefore, perform the adjustment, being aware that the image quality of all future printouts will be changed, when printing out originals other than the one that is used for the adjustment.

❑ Precautions after the completion of the adjustment

Nothing in particular.

❑ Remarks

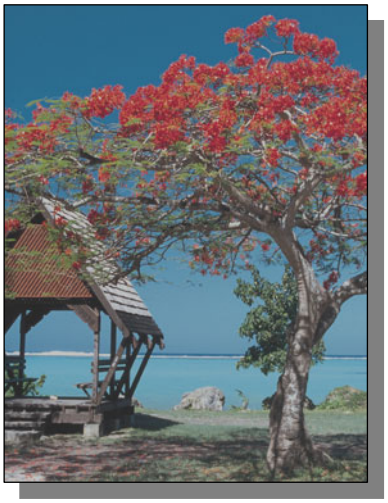
The saturation adjustment does not affect black or gray areas on the printout.

3.9 To Easily Adjust the Overall Contrast

Before the adjustment

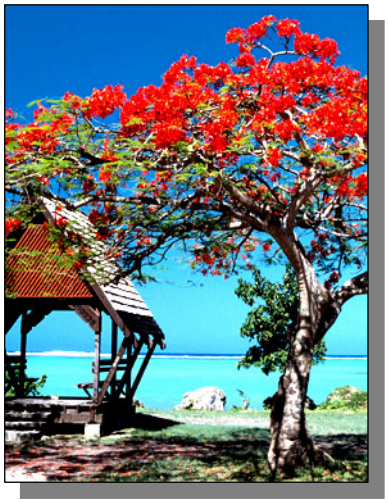
The image is printed with a natural contrast.
(Default printing)

After the adjustment



The contrast is decreased.

After the adjustment



The contrast is increased.

❑ Explanation

The contrast of the print image can be easily adjusted by changing the "Contrast" option on the printer driver.

❑ Procedures

*Both the service technician and the user can perform all adjustments.

(1) Change the "Contrast" option on the printer driver.

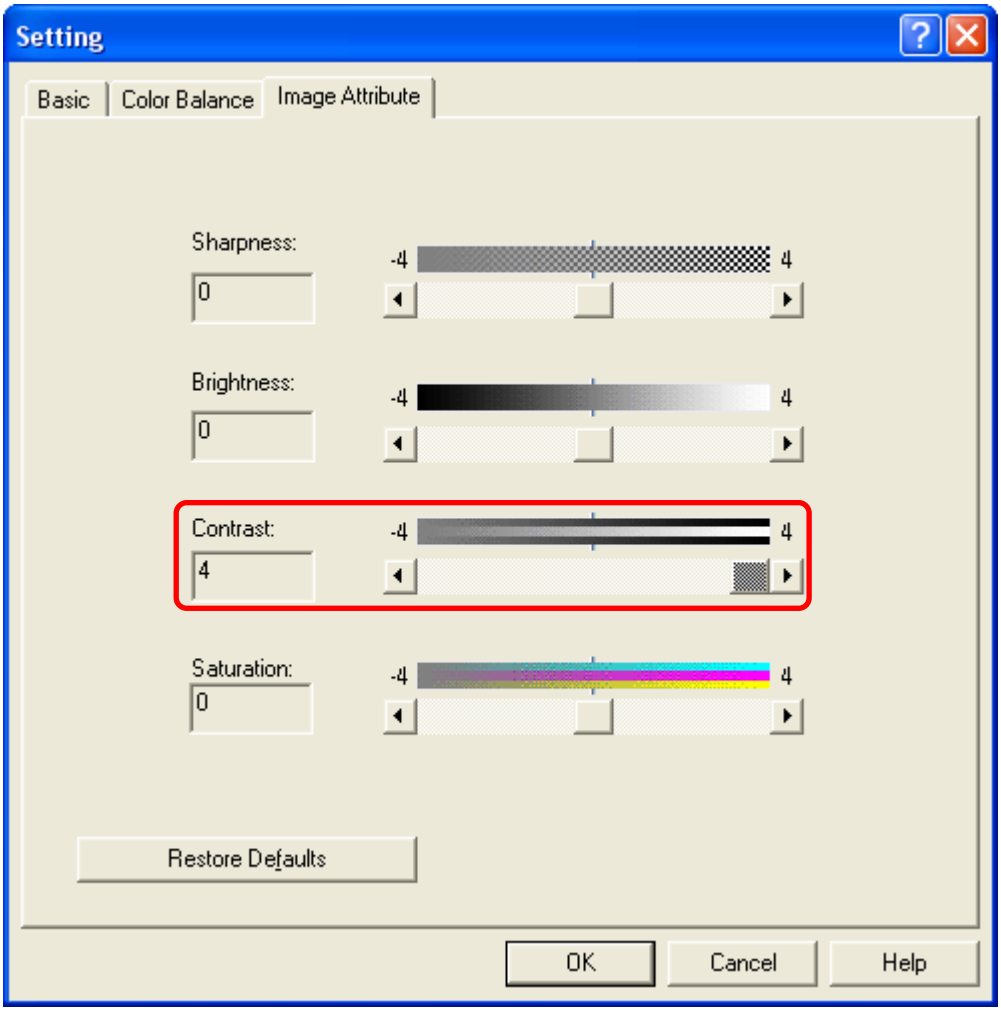
• Select the desired value for contrast on a scale of -4 (Lowest) to 4 (Highest).

For Windows

PCL5c PS3 * This adjustment will have an effect only on Auto or Color mode printing.

Open the property page of the printer driver. Press the [Setting] button in the "Image Quality" tab.

Change the "Contrast" option in the "Image Attribute" tab.



For Macintosh

Mac * This adjustment will have an effect only on full-color printing.

Open the print dialog box. Change the "Contrast" option.

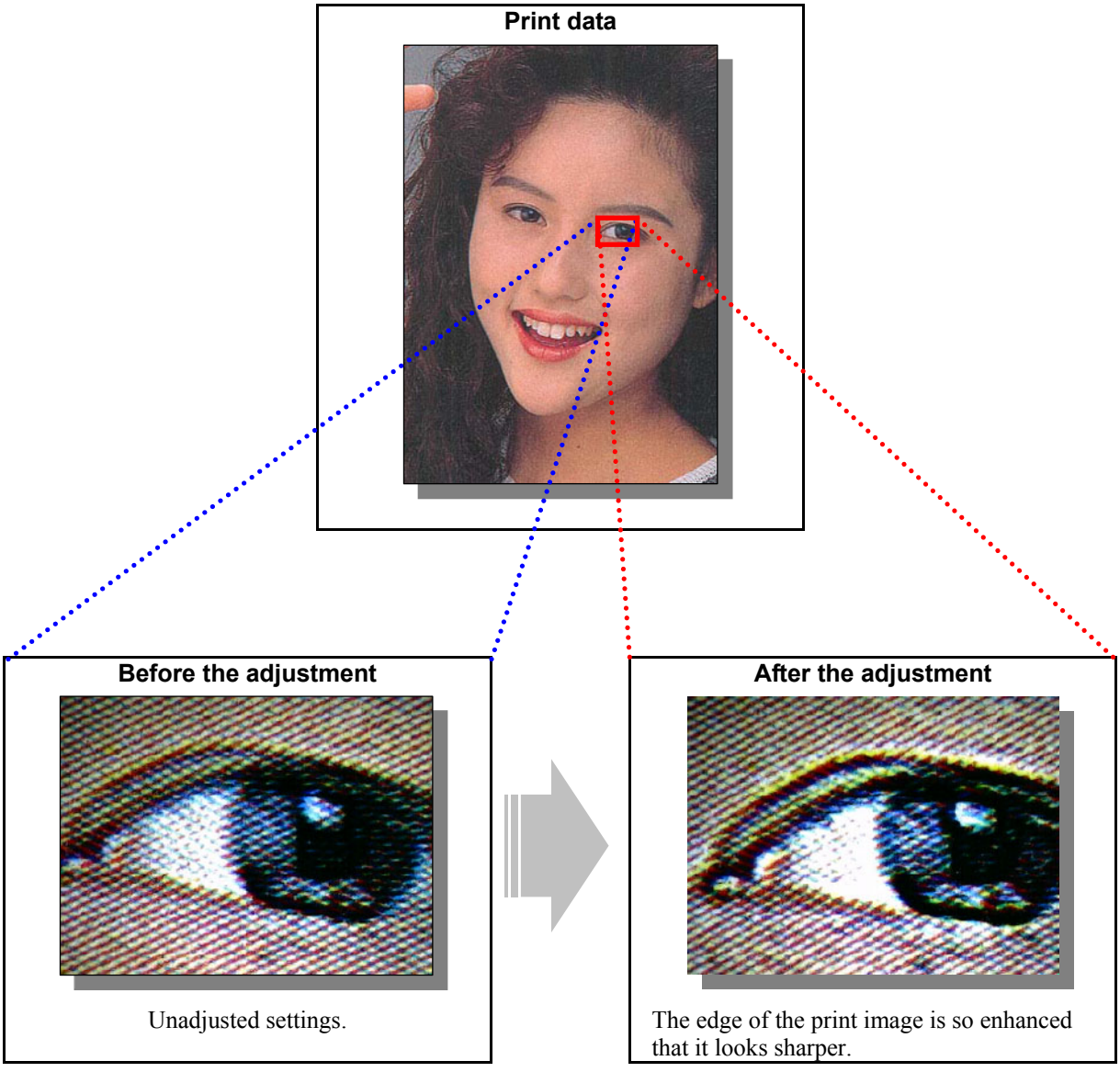
* The menu to select varies according to the operating system. Refer to the table below and select the menu.

OS	Menu
8.6 / 9.x	"Color Settings 4" ⇨ "Contrast"
10.2.x	"Printer Features" ⇨ "Feature Sets: Color settings 4" ⇨ "Contrast"
10.3.x / 10.4.x	"Color Settings 2" ⇨ "Contrast"

❑ Precautions after the completion of the adjustment

Nothing in particular.

3.10 To Obtain a Sharper Print Image


Print data
Before the adjustment
Unadjusted settings.
After the adjustment
The edge of the print image is so enhanced that it looks sharper.

❑ Explanation

Increase the sharpness intensity under the menu on the printer driver, in order to obtain a sharper print image.

* The sharpness adjustment will have an effect particularly on photo images, such as BMP, GIF, JPEG and TIFF.

❑ Procedures

*Both the service technician and the user can perform all adjustments.

(1) Change the "Sharpness" option on the printer driver.

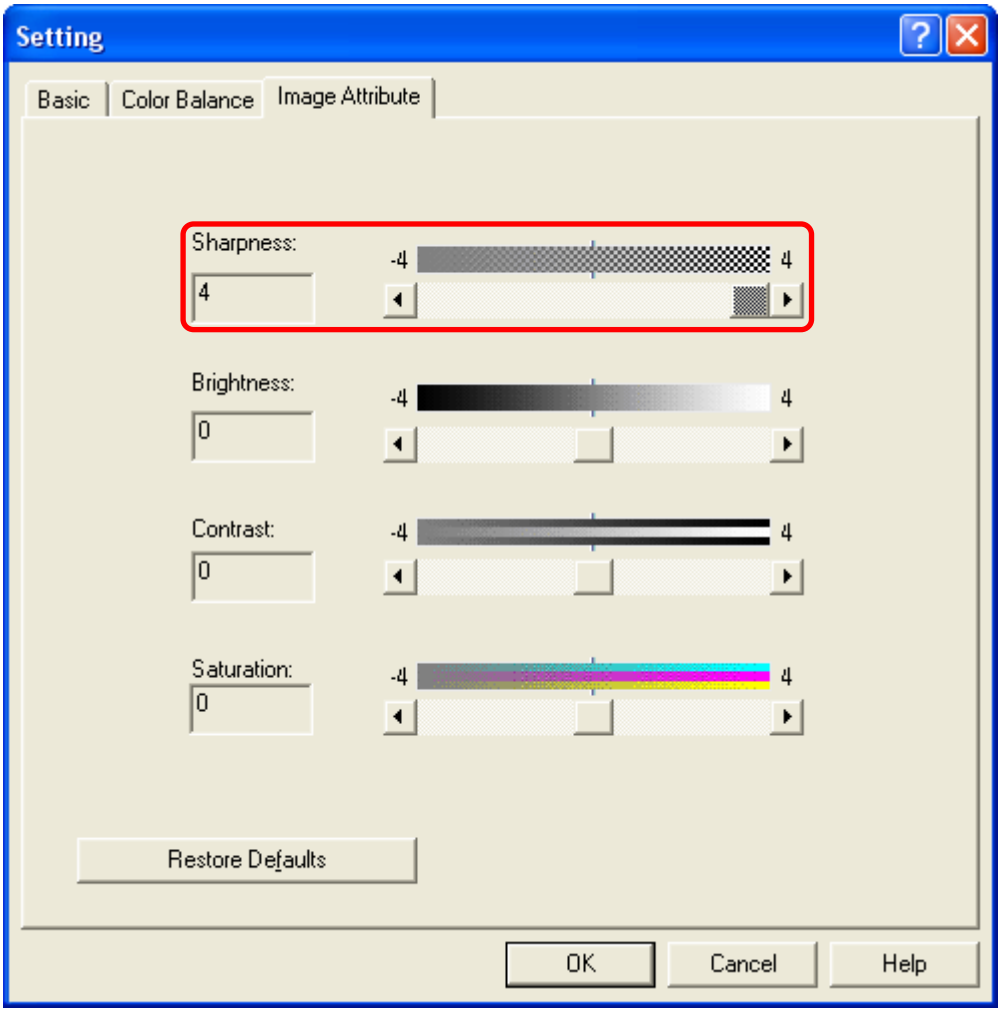
For Windows

PCL6 PS3 * This adjustment will have an effect only on Auto or Color mode printing.

Open the property page of the printer driver. Press the [Setting] button in the "Image Quality" tab.

Set the value for "Sharpness" within a range of "1" to "4" in the "Image Attribute" tab.

• Setting "4" provides the sharpest print image.



For Macintosh

Mac * This adjustment will have an effect only on full-color printing.

Open the print dialog box. Set the value for "Sharpness" within a range of "1" to "4."

• Setting "4" provides the sharpest print image.

*The menu to select varies according to the operating system. Refer to the table below and select the menu.

OS	Menu
8.6 / 9.x	"Color Settings 4" ⇨ "Sharpness"
10.2.x	"Printer Features" ⇨ "Feature Sets: Color settings 4" ⇨ "Sharpness"
10.3.x / 10.4.x	"Color Settings 2" ⇨ "Sharpness"

❑ Precautions after the completion of the adjustment

The adjustment may possibly cause rough edges of the image contained in low-resolution bitmap data. As a result, outlined edges may look shaded, black bands may appear, and toner may be scattered around the lines. Therefore, carefully perform the adjustment, while checking the printouts.

3.11 To Obtain a Softer Image

❑ Explanation

Decrease the sharpness intensity under the menu on the printer driver, in order to obtain a softer print image.

* The sharpness adjustment will have an effect particularly on photo images, such as BMP, GIF, JPEG and TIFF.

❑ Procedures

*Both the service technician and the user can perform all adjustments.

(1) Change the "Sharpness" option on the printer driver.

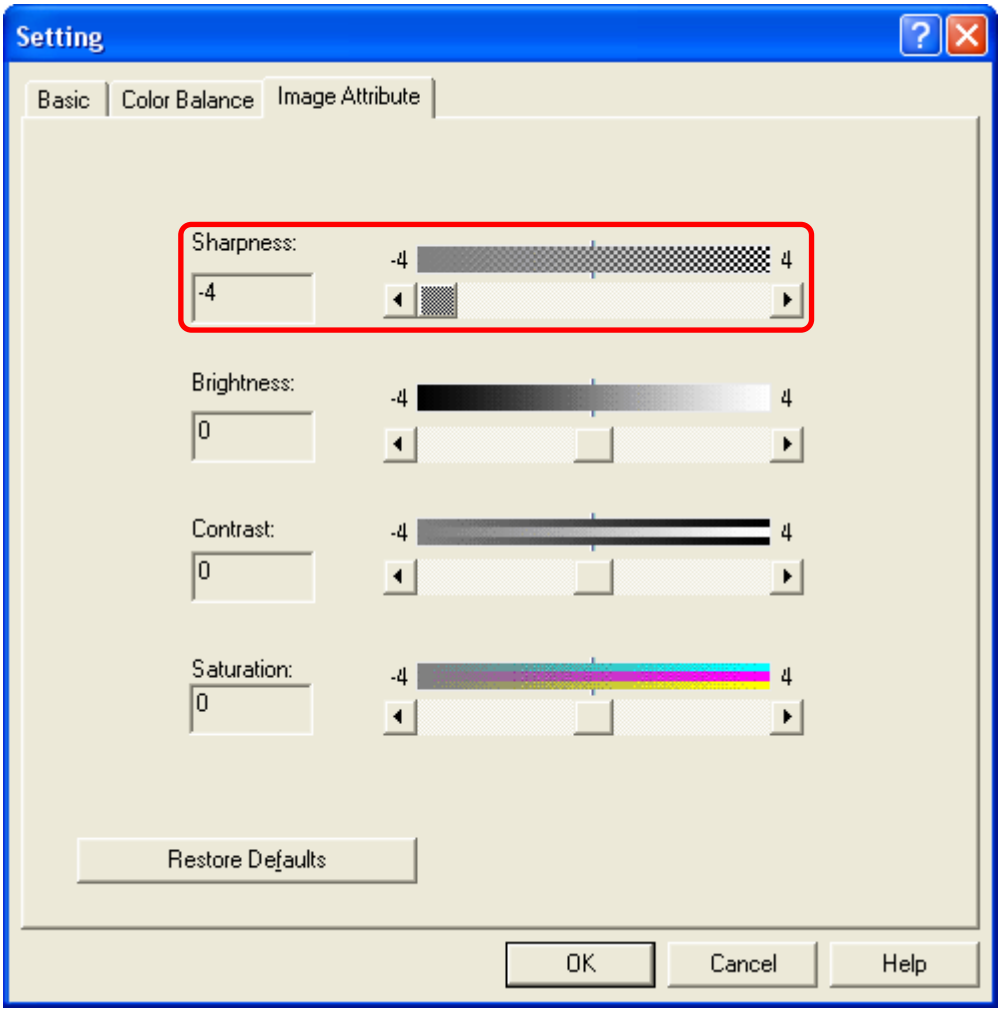
For Windows

PCL6 PS3 * This adjustment will have an effect only on Auto or Color mode printing.

Open the property page of the printer driver. Press the [Setting] button in the "Image Attribute" tab.

Set the value for "Sharpness" within a range of "-1" to "-4."

• Setting "-4" provides the smoothest (softest) image.



For Macintosh

Mac * This adjustment will have an effect only on full-color printing.

Open the print dialog box. Set the value for "Sharpness" within a range of "-1" to "-4."

• Setting "-4" provides the smoothest (softest) print image.

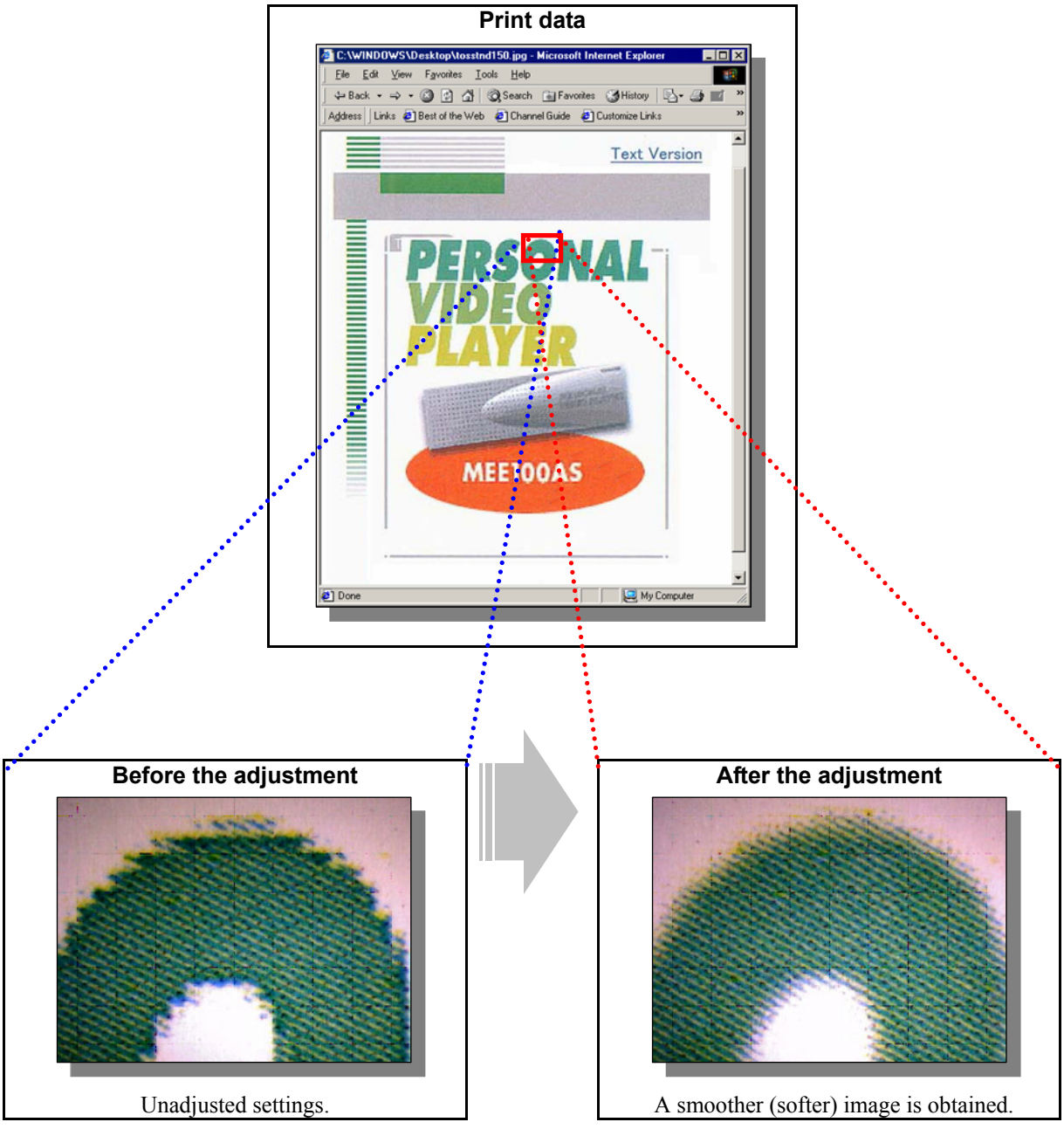
*The menu to select varies according to the operating system. Refer to the table below and select the menu.

OS	Menu
8.6 / 9.x	"Color Settings 4" ⇨ "Sharpness"
10.2.x	"Printer Features" ⇨ "Feature Sets: Color settings 4" ⇨ "Sharpness"
10.3.x / 10.4.x	"Color Settings 2" ⇨ "Sharpness"

❑ Precautions after the completion of the adjustment

The adjustment provides a soft or blurred image in general. Therefore, carefully perform the adjustment, while checking the printouts. Especially text and lines on the background of a gradational image, and text in the Format AutoShape dialog box with transparency selected on Microsoft Office may be blurred.

3.12 To Make Low-resolution Data Look Finer (To soften an image)



❑ Explanation

When a low-resolution image is printed, the edges may be jagged. Decrease the sharpness intensity, in order to eliminate the jaggies from the print image.

* The sharpness adjustment will have an effect particularly on photo images, such as BMP, GIF, JPEG and TIFF.

❑ Procedures

*Both the service technician and the user can perform all adjustments.

(1) Change the "Sharpness" option on the printer driver.

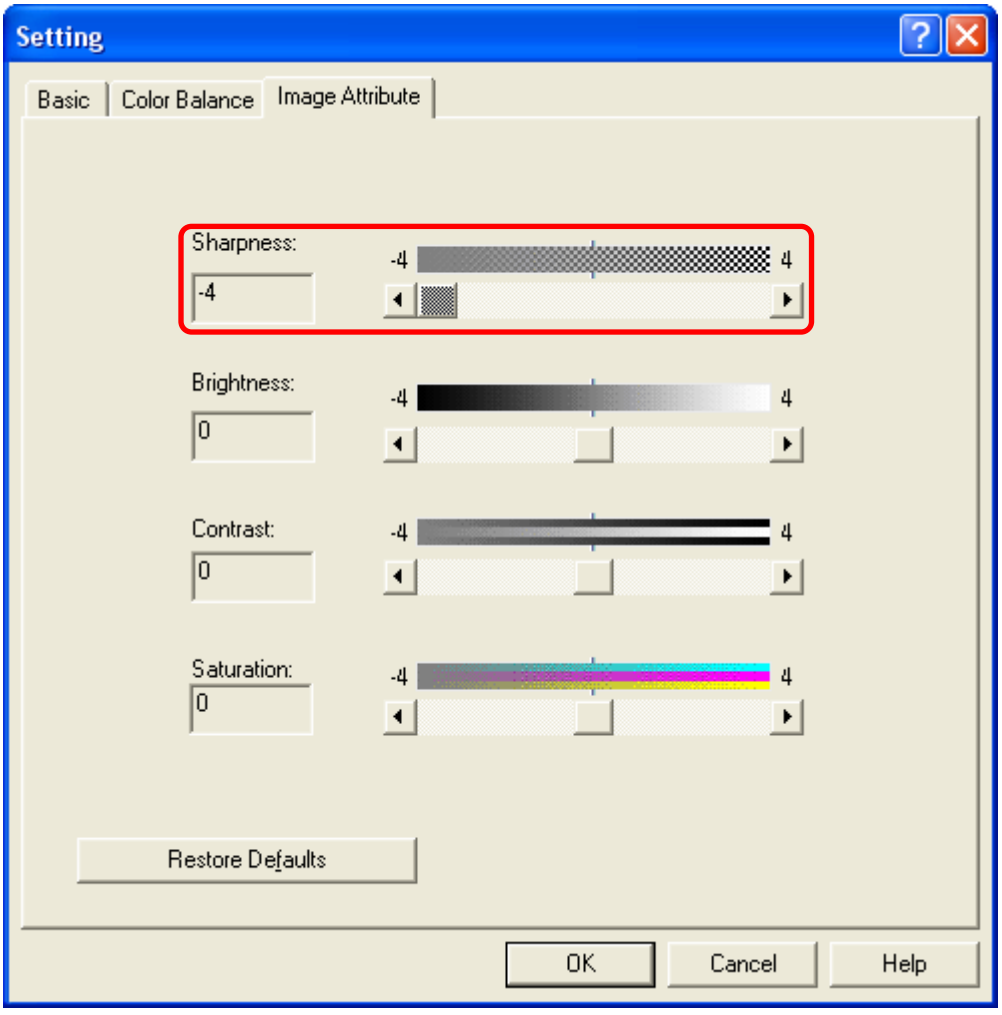
For Windows

PCL6 PS3 * This adjustment will have an effect only on Auto or Color mode printing.

Open the property page of the printer driver. Press the [Setting] button in the "Image Quality" tab.

Set the value for "Sharpness" within a range of "-1" to "-4" in the "Image Attribute" tab.

• Setting "-4" provides the smoothest (softest) print image.



For Macintosh

Mac * This adjustment will have an effect only on full-color printing.

Open the print dialog box. Set the value for "Sharpness" within a range of "-1" to "-4."

• Setting "-4" provides the smoothest (softest) print image.

*The menu to select varies according to the operating system. Refer to the table below and select the menu.

OS	Menu
8.6 / 9.x	"Color Settings 4" ⇨ "Sharpness"
10.2.x	"Printer Features" ⇨ "Feature Sets: Color settings 4" ⇨ "Sharpness"
10.3.x / 10.4.x	"Color Settings 2" ⇨ "Sharpness"

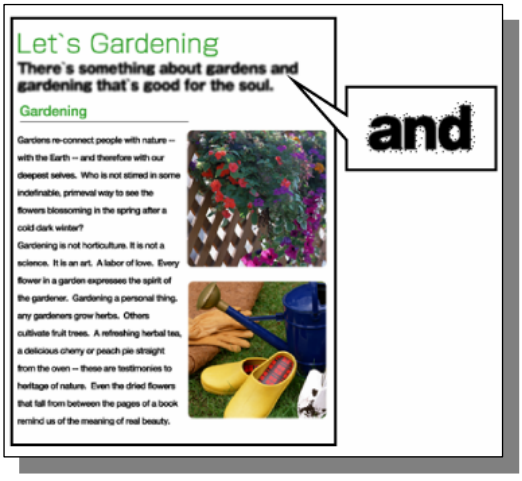
❑ Precautions after the completion of the adjustment

The adjustment provides a soft or blurred image in general. Therefore, carefully perform the adjustment, while checking the printouts. Especially text and lines on the background of a gradational image, and text in the Format AutoShape dialog box with transparency selected on Microsoft Office may be blurred.

3.13 To Eliminate Smudges from Highly Colored Text and Lines

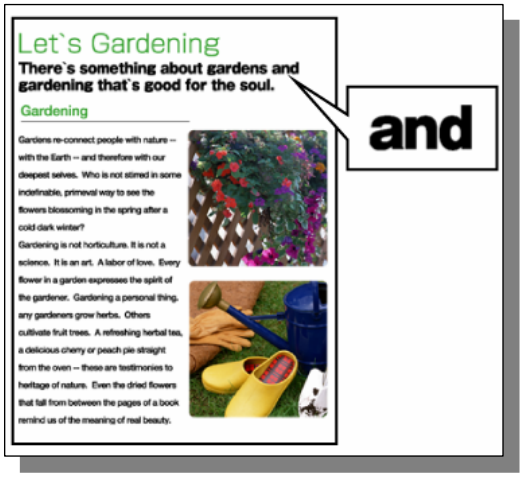
(To prevent toner scattering around text and lines where a large amount of toner is used)

Before the adjustment



Black text looks smudged due to toner scattering around the text.

After the adjustment



Smudges are eliminated.

❑ Explanation

When highly colored text and lines where a large amount of toner is used, created on raster data (image), such as BMP, GIF, JPEG and TIFF are printed, the text and lines look smudged due to toner scattering around the text and lines. Adjust the sharpness intensity or the amount of toner used, in order to obtain a clearer print image.

<Hint> If smudged text and lines appear on the print image in PDF format on Adobe Reader, unmark the "Print as image" checkbox to print out the image. If the "Print as image" checkbox is marked, text and lines will be printed as raster data (bitmap image) and may be smudged.

❑ Procedures

* Perform the adjustment in accordance with the procedures below.
* Both the service technician and the user can use procedure (1).
* Only the service technician must use procedures (2) and (3).

(1) Set "-1" for "Sharpness" on the printer driver.

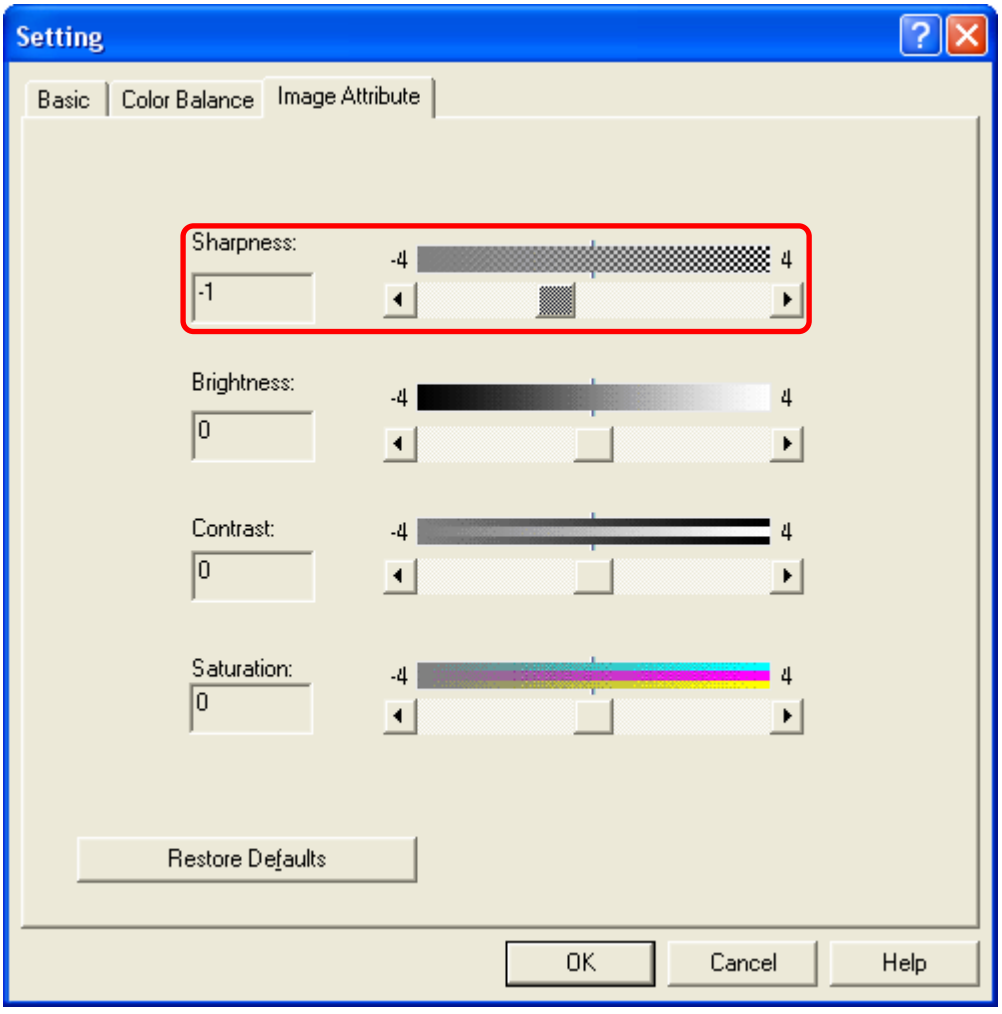
For Windows

PCL6 PS3 * This adjustment will have an effect only on Auto or Color mode printing.

Open the property page of the printer driver. Press the [Setting] button in the "Image Quality" tab.

Set "-1"for "Sharpness" in the "Image Attribute" tab.

* Always set "-1." Setting "-2" or a smaller value may provide blurred print images.



For Macintosh

Mac * This adjustment will have an effect only on full-color printing.

Open the print dialog box. Set "-1"for "Sharpness."

* Always set "-1." Setting "-2" or a smaller value may provide blurred print images.

* The menu to select varies according to the operating system. Refer to the table below and select the menu.

OS	Menu
8.6 / 9.x	"Color Settings 4" ⇨ "Sharpness"
10.2.x	"Printer Features" ⇨ "Feature Sets: Color settings 4" ⇨ "Sharpness"
10.3.x / 10.4.x	"Color Settings 2" ⇨ "Sharpness"

<Hint> The following options are recommended for users who frequently perform the adjustment using procedure (1).
Performing these options allows users to easily select the same conditions as the ones adjusted in procedure (1).

- Perform these options by registering the Custom Color Settings where "-1" is set for the sharpness option (only on Windows).
  * For further information regarding how to register the Custom Color Settings, refer to 3.23 To Register the Image Quality Adjusted Corresponding to a Preference.

- Set "1" for code 05-8120.
  * Setting "-1" for the sharpness option disables the sharpness adjustment by default. Setting "1" for code 05-8120 switches the position where the sharpness adjustment is disabled from "-1" to"0." Therefore, the sharpness adjustment is always disabled without the sharpness option changed (with "0" set).
    However, this adjustment changes the values set in the MFP. Therefore, it will affect every user who uses the printer by connecting it to the MFP. After the adjustment, the values changed will be applied to all printouts for the "Sharpness" option. Carefully perform the adjustment, being aware that the image quality of all future printouts will be changed, when printing out originals other than the one that is used for the adjustment.

After performing these options, print and check the print image quality.
If further image quality adjustments are still necessary, return the value for the sharpness option to "0" and use the next procedure according to the image quality problem you have.

- If the photo image contrast is insufficient: Go to procedure (2).
- If smudges (toner scattering) are not eliminated: Go to procedure (3).

PCL6 PS3 Mac * This adjustment will have an effect only on Auto or Color mode printing.

(2) If the photo image contrast is insufficient after the adjustment in procedure (1), enter adjustment mode [05]. Decrease the values for codes [8110 to 8117] to perform fine adjustment and decrease the sharpness intensity.

• Adjust the value for [05] code corresponding to the print option to be applied (PDL, Color mode, and Image quality type).

* Printing on Macintosh is performed in PostScript. (See the "PS3" row in the table below.)

PDL	Color mode	Image quality type	[05] code	Recommended value	Acceptable value range	Default
PS3	Auto/Color	General	05-8110	Set a value smaller than 128	0 to 255	128
		Photograph	05-8111			
		Presentation	05-8112			
		Line Art	05-8113			
PCL6	Auto/Color	General	05-8114			
		Photograph	05-8115			
		Presentation	05-8116			
		Line Art	05-8117			

* Set the value in increments of approximately 5, while checking the printouts until the optimum value is obtained.

* Setting "108" provides an effect corresponding to "-1" for the sharpness option. It is recommended to set approximately "118" corresponding to an intermediate value between "0" (default) and "-1" for the sharpness option, and then perform fine adjustment, while checking the printouts.

<Note>

- This adjustment changes the values set in the MFP. Therefore, it will affect every user who uses the printer by connecting it to the MFP. After the adjustment, the values changed will be applied to all printouts for the "Sharpness" option. Carefully perform the adjustment, being aware that the image quality of all future printouts will be changed, when printing out originals other than the one that is used for the adjustment.

- The code in the Standard Auto/Color mode is commonly used in the Twin-color mode. After the adjustment, the values changed will be also applied to the image quality in the Twin-color mode. When adjusting the image quality in the Standard mode, carefully perform the adjustment, being aware that the image quality of all future printouts will be changed, when performing printing in the Twin-color mode.

PCL6 PS3 Mac * This adjustment will have an effect only on Auto or Color mode printing.

(3) If smudges (toner scattering) are not eliminated after the adjustment in procedure (1), enter adjustment mode [05]. Decrease the values for codes [8076 to 8078], [8080 to 8088] or [1092 to 1096] to reduce the amount of toner used.

• Adjust the value for [05] code corresponding to the print option to be applied (Paper type, Image quality type, Halftone, and PDL).

* Printing on Macintosh is performed in PostScript. (See the "PS3" row in the table below.)

Paper type	Image quality type	Halftone	[05] code	Subcode (PDL)	Recommended value	Acceptable value range	Default
Special 1	General/Photograph/ Presentation	Auto/Smooth	05-8076	PCL6: 0 PS3: 1	Set a value smaller than the default.	0 to 255	113
		Detail	05-8085				
	Line Art	Smooth	05-8076				
		Auto/Detail	05-8085				
Special 2	General/Photograph/ Presentation	Auto/Smooth	05-8077				113
		Detail	05-8086				
	Line Art	Smooth	05-8077				
		Auto/Detail	05-8086				
Recycled paper	General/Photograph/ Presentation	Auto/Smooth	05-8078				128
		Detail	05-8087				
	Line Art	Smooth	05-8078				
		Auto/Detail	05-8087				
Plain paper	General/Photograph/ Presentation	Auto/Smooth	05-8080				128
		Detail	05-1092				
	Line Art	Smooth	05-8080				
		Auto/Detail	05-1092				
Thick 1	General/Photograph/ Presentation	Auto/Smooth	05-8081				113
		Detail	05-1093				
	Line Art	Smooth	05-8081				
		Auto/Detail	05-1093				
Thick 2	General/Photograph/ Presentation	Auto/Smooth	05-8082				113
		Detail	05-1094				
	Line Art	Smooth	05-8082				
		Auto/Detail	05-1094				
Thick 3	General/Photograph/ Presentation	Auto/Smooth	05-8083				113
		Detail	05-1095				
	Line Art	Smooth	05-8083				
		Auto/Detail	05-1095				
OHP	General/Photograph/ Presentation	Auto/Smooth	05-8084				128
		Detail	05-1096				
	Line Art	Smooth	05-8084				
		Auto/Detail	05-1096				

* Set the value in increments of approximately 30, while checking the printouts until the optimum value is obtained.

❑ Precautions after the completion of the adjustment

• The adjustment in procedure (1) may possibly provide insufficient photo contrast images. Therefore, carefully perform the adjustment, while checking the printouts.

• If the value set for the amount of toner used is too small in procedure (2), the photo image (head hair and shadows) may look unnaturally white. Therefore, carefully perform the adjustment, while checking the printouts.

3.14 To Clearly Print Light-Colored Thin Lines or Text

Before the adjustment

Five Storied Pagoda
Gate
Toshogu Shrine
Monorail
Restaurant Seiyoken
Gojoten Shrine
Keisei Line
Shinobazu Pond
Boat House
Benzaiten Temple
Relocation Issues and Trends
By 2047, the melting of polar ice will force general commercial relocation to higher ground, with climatic fluctuations mediating the trend. On a national basis, there will be extensive investment in the development of infrastructures in areas unlikely to be affected by rising sea levels. The strengthening of network infrastructures will be of particular importance, particularly to the success or failure of commercial or industrial enterprises.
800
700
600
500
400
300
200
100
0
2044 2045 2046 2047 2048 2049 2050
Country-A
Country-B
Country-C
Country-D
Relocation to higher ground depends on climatic trends.

Light-colored thin lines and text are dotted on the printout.

After the adjustment

Five Storied Pagoda
Gate
Toshogu Shrine
Monorail
Restaurant Seiyoken
Gojoten Shrine
Keisei Line
Shinobazu Pond
Boat House
Benzaiten Temple
Relocation Issues and Trends
By 2047, the melting of polar ice will force general commercial relocation to higher ground, with climatic fluctuations mediating the trend. On a national basis, there will be extensive investment in the development of infrastructures in areas unlikely to be affected by rising sea levels. The strengthening of network infrastructures will be of particular importance, particularly to the success or failure of commercial or industrial enterprises.
800
700
600
500
400
300
200
100
0
2044 2045 2046 2047 2048 2049 2050
Country-A
Country-B
Country-C
Country-D
Relocation to higher ground depends on climatic trends.

The light-colored thin lines and text are clearly printed out.

❑ Explanation

When light-colored thin lines and text are printed, they may be dotted on the printout. Change the options on the printer driver, adjust the color balance or gamma curve balance, in order to print them out clearly.

❑ Procedures

* The procedure to use varies, depending on whether to adjust the print image quality in the Color mode or in the Black and White mode. Refer to the procedure corresponding to the user's particular request.

* The item to set varies depending on the type of data to adjust. Select the effective option according to the data format to adjust, such as a print image (raster data), text (font), and line drawing (graphic data).

3.14.1 To Adjust the Print Image Quality in the Color Mode

*Perform the adjustment in accordance with the procedures below.
*Both the service technician and the user can use procedures (1), (2), and (3).
*Only the service technician must use procedures (4) and (5).

(1) Change the "Image Quality Type" and "Halftone" options.

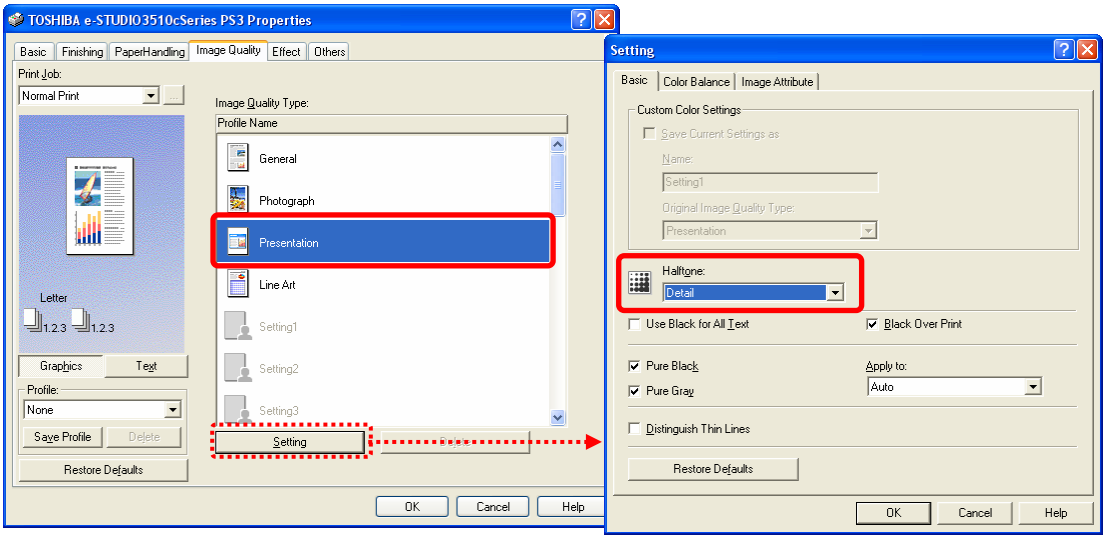
For Windows

PCL6 PS3 * This adjustment will have an effect only on Auto or Color mode printing.

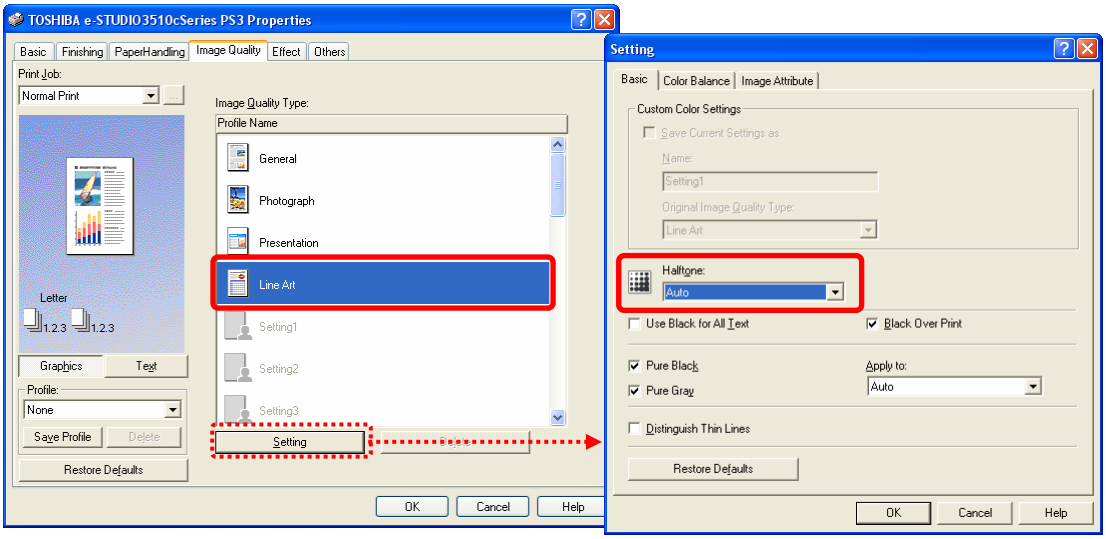
Open the property page of the printer driver. Change the "Image Quality Type" and "Halftone" options in the Image Quality tab.

• Set either of the following options, in accordance with the type of original to print:

• Image Quality Type: "Presentation" (To make color darker)
Halftone: "Detail" (To make the halftone screen high frequency)



• Image Quality Type: "Line Art" (To make the color darker and enhance thin lines)
Halftone: "Auto" or "Detail" (To make the halftone screen high frequency)



For Macintosh

Mac * This adjustment will have an effect only on full-color printing.

Open the print dialog box. Change the "Image Type" and "Halftone" options.

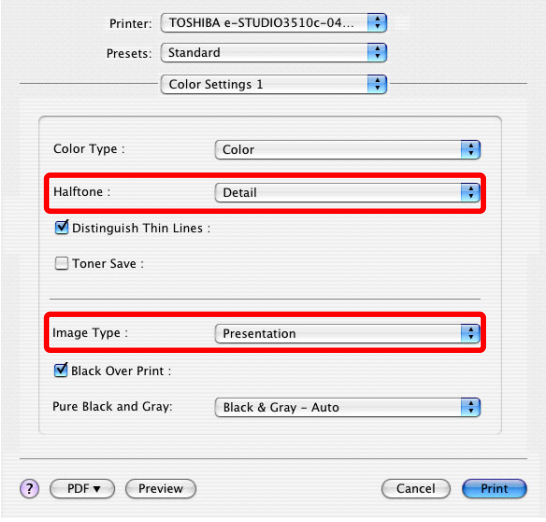
* The menu to select varies according to the operating system. Refer to the table below and select the menu.

OS	Menu
8.6 / 9.x	"Color Settings 2" ⇨ "Image Type" "Color Settings 1" ⇨ "Halftone"
10.2.x	"Printer Features" ⇨ "Feature Sets: Color settings 2" ⇨ "Image Type" "Printer Features" ⇨ "Feature Sets: Color settings 1" ⇨ "Halftone"
10.3.x / 10.4.x	"Color Settings 1" ⇨ "Image Type", "Halftone"

• Set either of the following options, in accordance with the type of original to print:

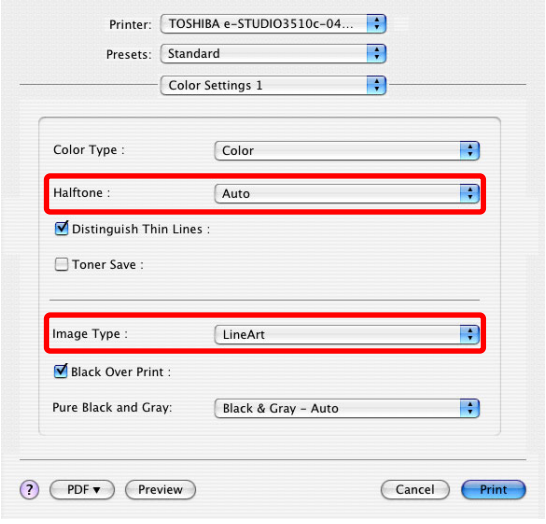
• Image Type: "Presentation" (To make color darker)

Halftone: "Detail" (To make the halftone screen high frequency)



• Image Type: "Line Art" (To make the color darker and enhance thin lines)

Halftone: "Auto" or "Detail" (To make the halftone screen high frequency)



After changing the options on the printer driver, print and check the print image quality.
If further image quality adjustments are still necessary, use the next procedure.

(2) In procedure (1), if "LineArt" is selected from among the "Image Quality Type" options, in order to adjust raster data (print image) or graphic data (line drawing), change the "Sharpness" option on the printer driver.

For Windows

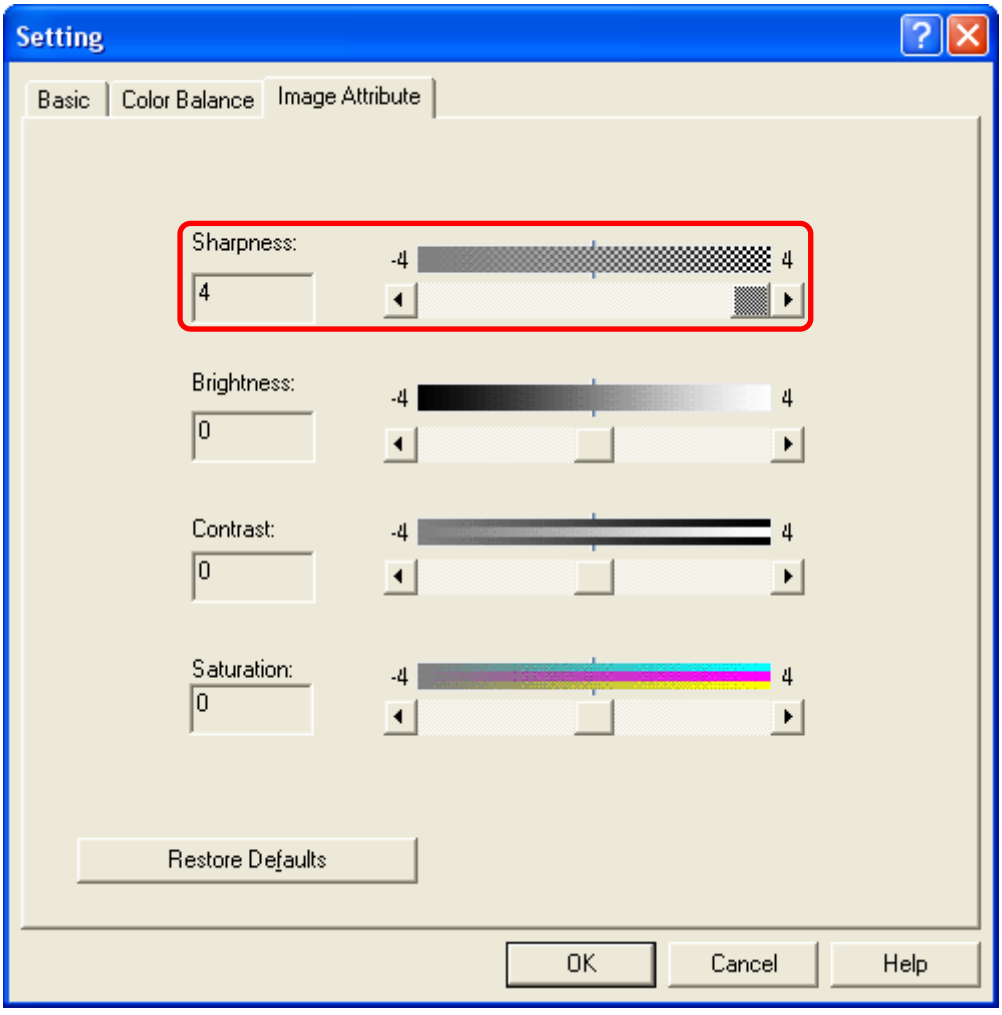
PCL6 PS3 * This adjustment will have an effect only on Auto or Color mode printing.

Open the property page of the printer driver. Press the [Setting] button in the "Image Quality" tab.

Set the value for "Sharpness" within a range of "1" to "4" in the "Image Attribute" tab.

• Setting "4" provides the sharpest print image.

* Initially, set "4" and check the printout. If further image quality adjustments are still necessary, refer to <Hint> to do this.



For Macintosh

Mac * This adjustment will have an effect only on full-color printing.

Open the print dialog box. Set the value for "Sharpness" within a range of "1" to "4."

• Setting "+4" provides the sharpest print image.

* Initially, set "4" and check the printout. If further image quality adjustments are still necessary, refer to <Hint> to do this.

* The menu to select varies according to the operating system. Refer to the table below and select the menu.

OS	Menu
8.6 / 9.x	"Color Settings 4" ⇨ "Sharpness"
10.2.x	"Printer Features" ⇨ "Feature Sets: Color settings 4" ⇨ "Sharpness"
10.3.x / 10.4.x	"Color Settings 2" ⇨ "Sharpness"

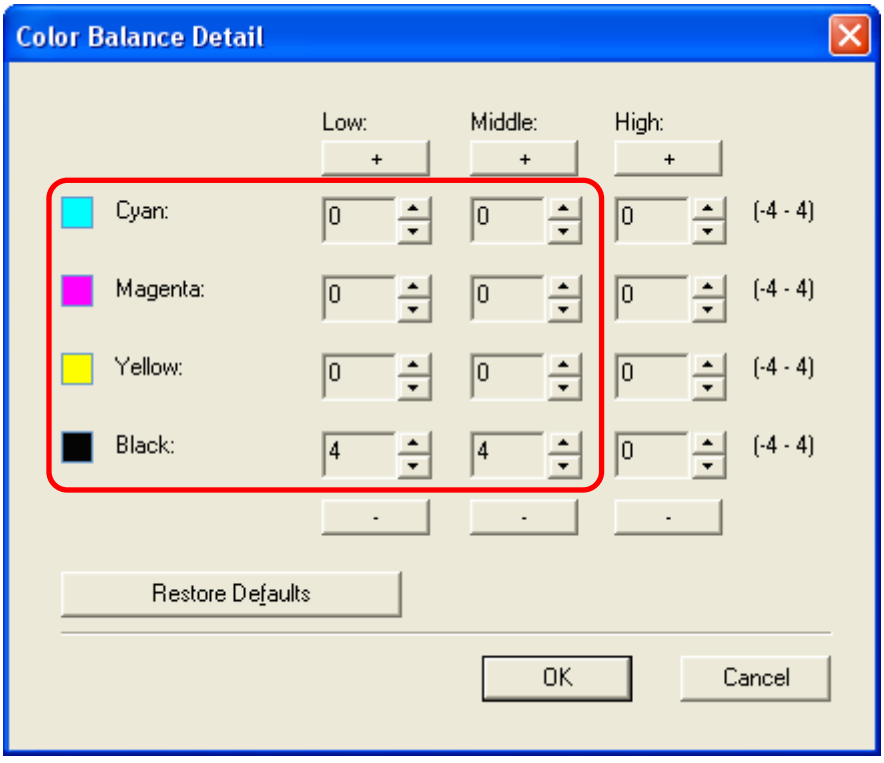
<Hint> In addition to the sharpness adjustment, decreasing "Brightness" (moving to the [-] side), changing "Contrast" or increasing "Saturation" (moving to the [+] side) may improve the image quality.

After changing the option on the printer driver, print and check the print image quality.
If further image quality adjustments are still necessary, use the next procedure.

PCL6 PS3 * This adjustment will have an effect only on Auto or Color mode printing.

(3) Open the property page of the printer driver. Press the [Setting] button in the "Image Quality" tab.
Mark the "Detail" checkbox in the "Color Balance" tab. Press the [Edit] button.
Set the value for the Low/Medium density of the color you would like to adjust, within a range of "1" to "4" in the "Color Balance Details" option.
*This adjustment will have an effect only on printing on the Windows PCL6 or PS3 emulation printer driver.
(This adjustment cannot be performed on a Macintosh printer driver.)

* Initially, set "4" and check the printout.



After changing the option on the printer driver, print and check the print image quality.
If further image quality adjustments are still necessary, use the next procedure.

PCL6 PS3 Mac * This adjustment will have an effect only on Auto or Color mode printing.

(4) Enter adjustment mode [05]. Adjust the color balance.
• Use steps (a) to (b) to adjust the color balance.

(a) Enter adjustment mode [05]. Select code [396]. Press the [START] button.
• Image quality control will be forcibly performed to correct variations in image contrast.

(b) Enter adjustment mode [05]. Change the values for codes [8054 to 8057] or [8062 to 8065] to adjust the color balance and increase the color density.
• Adjust the value for [05] code corresponding to the print option to be applied (PDL and Halftone).

Ex.: • When printing on Windows is performed with the following options selected: PCL6, Image Quality Type = Presentation, Halftone =Detail
> Change the values for Y: 05-8062, M: 05-8063, C: 05-8064 and K: 05-8065.

• When printing on Macintosh is with the following option selected: Image Type = Line Art, Halftone = Auto
> Change the values for Y: 05-8054, M: 05-8055, C: 05-8056 and K: 05-8057.
* Printing on Macintosh is performed in PostScript. (See the "PS3" row in the table below.)

Color to adjust	PDL	Halftone	[05] code	Subcode	Recommended value	Acceptable value range	Default
Y (Yellow)	PCL6	Detail	05-8062	0/1/2	Set a value larger than 128.	0 to 255	128
	PS3	Detail	05-8054	0/1/2			
M (Magenta)	PCL6	Detail	05-8063	0/1/2			
	PS3	Detail	05-8055	0/1/2			
C (Cyan)	PCL6	Detail	05-8064	0/1/2			
	PS3	Detail	05-8056	0/1/2			
K (Black)	PCL6	Detail	05-8065	0/1/2			
	PS3	Detail	05-8057	0/1/2			

* Set the value in increments of approximately 20, while checking the printouts until the optimum value is obtained.

* The value for [05] code for K (black) will affect black-and-white images (including text, lines and photos) on the printout.

* The subcode varies according to the area where the density is adjusted. Refer to the table below and set the subcode for the area to be adjusted.

Subcode	Area where the density is adjusted
0	Low-density area
1	Medium-density area
2	High-density area

<Note> • This adjustment changes the values set in the MFP. Therefore, it will affect every user who uses the printer by connecting it to the MFP. After the adjustment, the values changed will be applied to all printouts for the "Image Quality Type" and "Halftone" options. (For instance, if the value for [05] code for PCL6 and Detail is changed, it will be applied to printing performed with PCL6 and Halftone = "Detail" (or "Auto") selected.)
Carefully perform the adjustment, being aware that the image quality of all future printouts will be changed, when printing out originals other than the one that is used for the adjustment.
If "Smooth" is selected from among the "Halftone" options, this adjustment will have no affect.

• This code is commonly used in the Twin-color mode and the Color mode. After the adjustment, the values changed will be also applied to the image quality in the Color mode. When adjusting the image quality in the Twin-color mode, carefully perform the adjustment, being aware that the image quality of all future printouts will be changed, when performing printing in the Color mode.

After adjusting the color balance, print and check the print image quality.
If further image quality adjustments are still necessary, use the next procedure.

PCL6 PS3 Mac * This adjustment will have an effect only on Auto or Color mode printing.

(5) Enter adjustment mode [05]. Increase the values for codes [8110 to 8117] to perform fine adjustment and increase the sharpness intensity.

• Adjust the value for [05] code corresponding to the print option to be applied (PDL, Color mode, and Image quality type).

* Printing on Macintosh is performed in PostScript. (See the "PS3" row in the table below.)

PDL	Color mode	Image quality type	[05] code	Recommended value	Acceptable value range	Default
PS3	Auto/Color	General	05-8110	Set a value lager than 128	0 to 255	128
		Photograph	05-8111			
		Presentation	05-8112			
		Line Art	05-8113			
PCL6	Auto/Color	General	05-8114			
		Photograph	05-8115			
		Presentation	05-8116			
		Line Art	05-8117			

* Set the value in increments of approximately 5, while checking the printouts until the optimum value is obtained.

<Hint> This adjustment affects on the following areas according to Image Quality Type:

- General, Photograph, and Presentation: Only raster data (print image)
- Line Art: Only thin lines, small text and raster data

<Note>

- This adjustment changes the values set in the MFP. Therefore, it will affect every user who uses the printer by connecting it to the MFP. After the adjustment, the values changed will be applied to all printouts for the "Sharpness" option. Carefully perform the adjustment, being aware that the image quality of all future printouts will be changed, when printing out originals other than the one that is used for the adjustment.

- The code in Standard Auto/Color mode is commonly used in the Twin-color mode. After the adjustment, the values changed will be also applied to the image quality in the Twin-color mode. When adjusting the image quality in Standard mode, carefully perform the adjustment, being aware that the image quality of all future printouts will be changed, when performing printing in the Twin-color mode.

❑ Precautions after the completion of the adjustment

The adjustment may possibly cause outlined edges, incorrect color of thin lines, jaggies, and variations in gradation. As a result the photo image may look unnatural. Therefore, carefully perform the adjustment, while checking the printouts.

3.14.2 To Adjust the Print Image Quality in the Black and White Mode

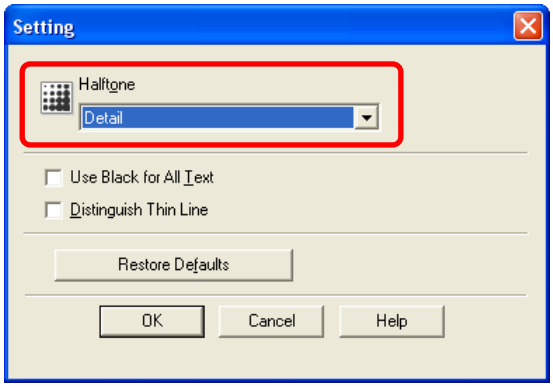
*Perform the adjustment in accordance with the procedures below.
*Both the service technician and the user can use procedure (1).
*Only the service technician must use procedures (2) and (3).

(1) Change the "Halftone" option on the printer driver.

For Windows

PCL6 PS3 * This adjustment will have an effect only on Black and white mode printing.

Open the property page of the printer driver. Press the [Setting] button in the "Image Quality" tab.
Select "Detail" from among the "Halftone" options.

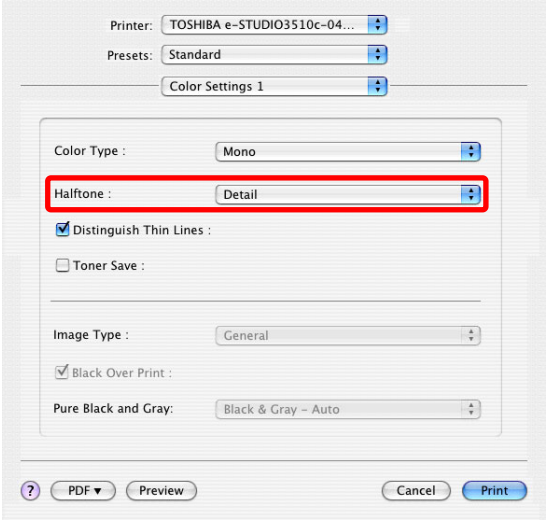


For Macintosh

Mac * This adjustment will have an effect only on Black and white mode printing.

Open the print dialog box. Select "Detail" from among the "Halftone" options.
*The menu to select varies according to the operating system. Refer to the table below and select the menu.

OS	Menu
8.6 / 9.x	"Color Settings 1" ⇨ "Halftone"
10.2.x	"Printer Features" ⇨ "Feature Sets: Color settings 1" ⇨ "Halftone"
10.3.x / 10.4.x	"Color Settings 1" ⇨ "Halftone"



After changing the option on the printer driver, print and check the print image quality.
If further image quality adjustments are still necessary, use the next procedure.

PCL6 PS3 Mac * This adjustment will have an effect only on Black and white mode printing.

(2) Enter adjustment mode [05]. Increase the values for codes [7315 to 7318] to adjust the gamma curve balance and increase the density on Black and White mode printing.

• Adjust the value for [05] code corresponding to the print option to be applied (PDL and Halftone).

* Printing on Macintosh is performed in PostScript. (See the "PS3" row in the table below.)

PDL	Halftone	[05] code	Subcode	Recommended value	Acceptable value range	Default
PS3	Smooth	05-7315	0/1/2	Set a value larger than 128	0 to 255	128
	Detail	05-7316	0/1/2			
PCL6	Smooth	05-7317	0/1/2			
	Detail	05-7318	0/1/2			

* Set the value in increments of approximately 10, while checking the printouts until the optimum value is obtained.

* The subcode varies according to the area where the density is adjusted. Refer to the table below and set the subcode for the area to be adjusted.

Subcode	Area where the density is adjusted
0	Low-density area
1	Medium-density area
2	High-density area

<Note>

- This adjustment changes the values set in the MFP. Therefore, it will affect every user who uses the printer by connecting it to the MFP. After the adjustment, the values changed will be applied to all printouts for the "Halftone" option. (For instance, if the value for [05] code for PCL and Detail is changed, it will be applied to printing performed with PCL6 and Halftone = "Detail" (or "Auto") selected.) Carefully perform the adjustment, being aware that the image quality of all future printouts will be changed, when printing out originals other than the one that is used for the adjustment.

- When "Mono" is selected from among the "Color" options and "Auto" (default) is selected from among the "Halftone" options, "Detail" of the "Halftone" options is applied to text and graphics (illustrations), and "Smooth" is applied to raster data (images). Therefore, particular attention is required since the adjustment may have a different impact according to the patterns of the image to be printed.

After increasing the density, print and check the print image quality.
If further image quality adjustments are still necessary, use the next procedure.

PCL6 PS3 Mac * This adjustment will have an effect only on Black and white mode printing.

(3) Enter adjustment mode [05]. Increase the value for code [7330] or [7335] to perform fine adjustment and increase the sharpness intensity.

• Adjust the value for [05] code corresponding to the print option to be applied (PDL and Color mode).

* Printing on Macintosh is performed in PostScript. (See the "PS3" row in the table below.)

PDL	Color mode	[05] code	Recommended value	Acceptable value range	Default
PS3	Black and White	05-7330	Set a value lager than 128	0 to 255	128
PCL6	Black and White	05-7335			

* Set the value in increments of approximately 5, while checking the printouts until the optimum value is obtained.

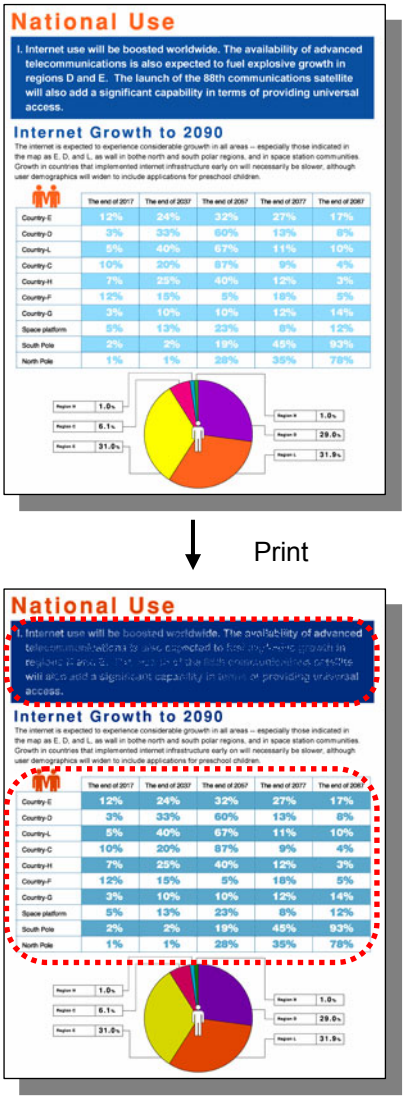
<Note> This adjustment changes the values set in the MFP. Therefore, it will affect every user who uses the printer by connecting it to the MFP. After the adjustment, the values changed will be applied to all printouts for the "Sharpness" option. Carefully perform the adjustment, being aware that the image quality of all future printouts will be changed, when printing out originals other than the one that is used for the adjustment.

❑ Precautions after the completion of the adjustment

The adjustment may possibly cause outlined edges, jaggies and variations in gradation. As a result the photo image may look unnatural. Therefore, carefully perform the adjustment, while checking the printouts.

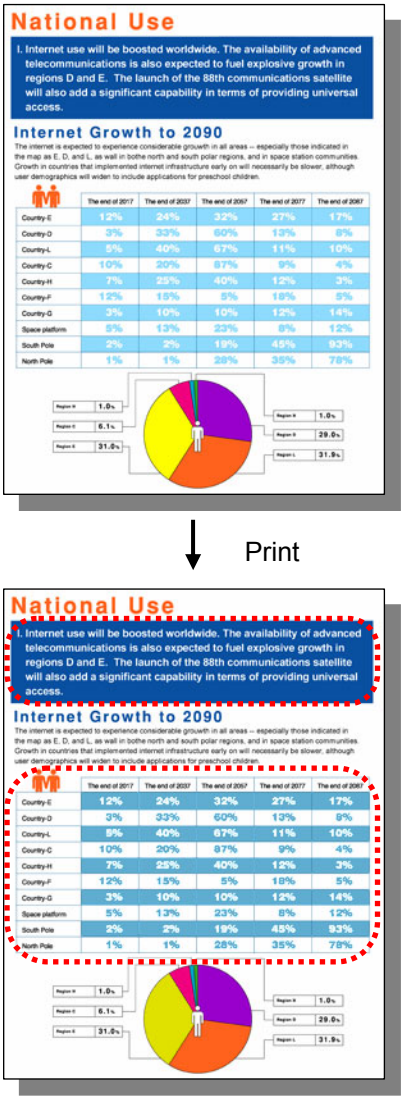
3.15 To Make the Light-Colored Area Darker on the Printout

Before the adjustment


National Use
I. Internet use will be boosted worldwide. The availability of advanced telecommunications is also expected to fuel explosive growth in regions D and E. The launch of the 88th communications satellite will also add a significant capability in terms of providing universal access.
Internet Growth to 2090
Print
National Use
Internet Growth to 2090

The light-colored area becomes darker but the highly colored area becomes blurred.

After the adjustment


National Use
I. Internet use will be boosted worldwide. The availability of advanced telecommunications is also expected to fuel explosive growth in regions D and E. The launch of the 88th communications satellite will also add a significant capability in terms of providing universal access.
Internet Growth to 2090
Print
National Use
Internet Growth to 2090

Only the light-colored area becomes darker.

❑ Explanation

When the entire image is printed darker to make the light-colored area darker, the highly colored area may become much darker and blurred. Change the options on the printer driver or adjust the color balance, in order to make only the light-colored area darker while leaving the highly colored area as it is.

❑ Procedures

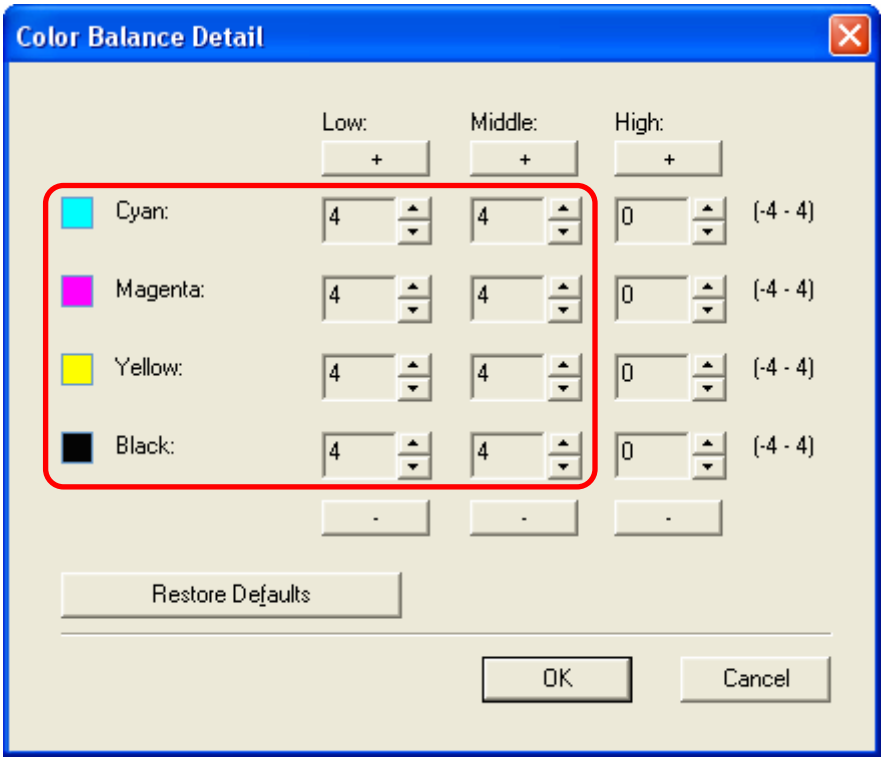
* Perform the adjustment in accordance with the procedures below.
* Both the service technician and the user can use procedure (1).
* Only the service technician must use procedures (2) and (3).
* The item to set varies depending on the type of data to adjust. Select an effective option according to the data format to adjust, such as a print image (raster data), text (font), and line drawing (graphic data).

PCL6 PS3 * This adjustment will have an effect only on Auto or Color mode printing.

(1) Open the property page of the printer driver. Press the [Setting] button in the "Image Quality" tab.
Mark the "Detail" checkbox in the "Color Balance" tab. Press the [Edit] button.
Set the value for the Low/Medium density of the color you would like to adjust, within a range of "1" to "4" in the "Color Balance Details" option.

* This adjustment will have an effect only on printing on a Windows PCL6 or PS3 emulation printer driver. (This adjustment cannot be performed on a Macintosh printer driver.)

* Initially, set "4" and check the printout.



After changing the option on the printer driver, print and check the print image quality.
If further image quality adjustments are still necessary, the service technician must use the next procedure according to the image type.

- To adjust the color image: Go to procedure (2).
- To adjust the black and white image: Go to procedure (3).

PCL6 PS3 Mac * This adjustment will have an effect only on Auto or Color mode printing.

(2) Enter adjustment mode [05]. Increase the values for codes [8050 to 8065] to increase the Low/Medium density of the color.

• Adjust the value for [05] code corresponding to the print option to be applied (PDL and Halftone).

Ex.: • When printing on Windows is performed with the following options selected: PCL6, Image Quality Type = General, Halftone = Auto

> Text area
Change the values for Y: 05-8062, M: 05-8063, C: 05-0864 and K: 05-8065.

> Graphic and image area
Change the values for Y: 05-8058, M: 05-8059, C: 05-8060 and K: 05-8061.

• When printing on Macintosh is performed with the following option selected: Image Type = Photograph, Halftone = Smooth

> Change the values for Y: 05-8050, M: 05-8051, C: 05-8052 and K: 05-8053.

*Printing on Macintosh is performed in PostScript. (See the "PS3" row in the table below.)

Color to adjust	PDL	Halftone	[05] code	Subcode	Recommended value	Acceptable value range	Default
Y (Yellow)	PCL5c	Smooth	05-8058	0/1	Set a value larger than 128.	0 to 255	128
		Detail	05-8062	0/1			
	PS3	Smooth	05-8050	0/1			
		Detail	05-8054	0/1			
M (Magenta)	PCL5c	Smooth	05-8059	0/1			
		Detail	05-8063	0/1			
	PS3	Smooth	05-8051	0/1			
		Detail	05-8055	0/1			
C (Cyan)	PCL5c	Smooth	05-8060	0/1			
		Detail	05-8064	0/1			
	PS3	Smooth	05-8052	0/1			
		Detail	05-8056	0/1			
K (Black)	PCL5c	Smooth	05-8061	0/1			
		Detail	05-8065	0/1			
	PS3	Smooth	05-8053	0/1			
		Detail	05-8057	0/1			

*Set the value in increments of approximately 20, while checking the printouts until the optimum value is obtained.

* "Halftone" refers to how halftones are printed. Two options are available: "Smooth" which is intended to improve the reproducibility of gradation and "Detail" which is intended to print halftones in details (with the high frequency).
The halftone option to be applied in printing can be selected from among the "Halftone" options on the printer driver (Windows) or in the print dialog box (Macintosh).
"Auto" is selected from among the "Apply to" options by default. It is intended to automatically select "Smooth" or "Detail" in accordance with "Apply to" of the halftone option, the selected "Color" and "Image Quality Type" options, as described in the table below.

Apply to	"Color" and "Image Quality Type" options					
	Auto/Color				Black and White	Twin Color
	General	Photograph	Presentation	Line Art		
Text	Detail	Detail	Detail	Detail	Detail	Detail
Graphic (Illustration, line, etc.)	Smooth	Smooth	Smooth	Detail	Detail	Smooth
Image (Photograph, etc.)	Smooth	Smooth	Smooth	Detail	Smooth	Smooth

* The subcode varies according to the area where the density is adjusted. Refer to the table below and set the subcode for the area to be adjusted.

Subcode	Area where the density is adjusted
0	Low-density area
1	Medium-density area
2	High-density area

<Note>

- This adjustment changes the values set in the MFP. Therefore, it will affect every user who uses the printer by connecting it to the MFP. After the adjustment, the values changed will be applied to all printouts for the "Image Quality Type" and "Halftone" options. (For instance, if the value for [05] code for PCL6 and Smooth is changed, it will be applied to printing performed with PCL6 and Halftone = "Smooth" (or "Auto") selected.) Carefully perform the adjustment, being aware that the image quality of all future printouts will be changed, when printing out originals other than the one that is used for the adjustment.

- This code is commonly used in the Twin-color mode and the Color mode. After the adjustment, the values changed will be also applied to the image quality in the Color mode. When adjusting the image quality in the Twin-color mode, carefully perform the adjustment, being aware that the image quality of all future printouts will be changed, when performing printing in the Color mode.

PCL6 PS3 Mac * This adjustment will have an effect only on Black and white mode printing.

(3) Increase the values for codes [7315 to 7318] to adjust the gamma curve balance and increase the Low/Medium density on Black and White mode printing.

• Adjust the value for [05] code corresponding to the print option to be applied (PDL and Halftone).

* Printing on Macintosh is performed in PostScript. (See the "PS3" row in the table below.)

PDL	Halftone	[05] code	Subcode	Recommended value	Acceptable value range	Default
PS3	Smooth	05-7315	0/1/2	Set a value larger than 128	0 to 255	128
	Detail	05-7316	0/1/2			
PCL6	Smooth	05-7317	0/1/2			
	Detail	05-7318	0/1/2			

* Set the value in increments of approximately 10, while checking the printouts until the optimum value is obtained.

* The subcode varies according to the area where the density is adjusted. Refer to the table below and set the subcode for the area to be adjusted.

Subcode	Area where the density is adjusted
0	Low-density area
1	Medium-density area
2	High-density area

<Note>

- This adjustment changes the values set in the MFP. Therefore, it will affect every user who uses the printer by connecting it to the MFP. After the adjustment, the values changed will be applied to all printouts for the "Halftone" option. (For instance, if the value for [05] code for PCL and Detail is changed, it will be applied to printing performed with PCL6 and Halftone = "Detail" (or "Auto") selected.) Carefully perform the adjustment, being aware that the image quality of all future printouts will be changed, when printing out originals other than the one that is used for the adjustment.

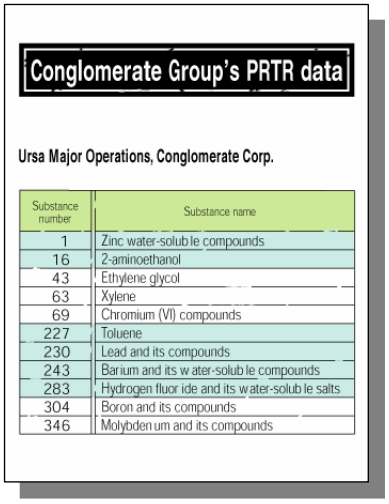
- When "Mono" is selected from among the "Color" options and "Auto" (default) is selected from among the "Halftone" options, "Detail" of the "Halftone" options is applied to text and graphics (illustrations), and "Smooth" is applied to raster data (images). Therefore, particular attention is required since the adjustment may have a different impact according to the patterns of the image to be printed.

❑ Precautions after the completion of the adjustment

Nothing in particular.

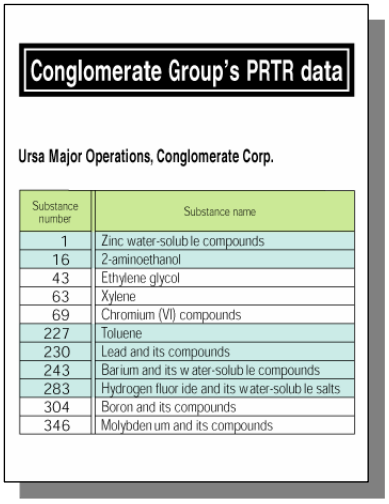
3.16 To Clearly Print Thin Lines/Double Lines

Before the adjustment



Thin lines or double lines are dotted on the printout.

After the adjustment



The thin lines or double lines are clearly printed out.

❑ Explanation

When thin lines or double lines, which are laid out on a solid filled area, are printed out, they may be dotted on the printout. Change the option on the printer driver, in order to clearly print them out.

❑ Procedures

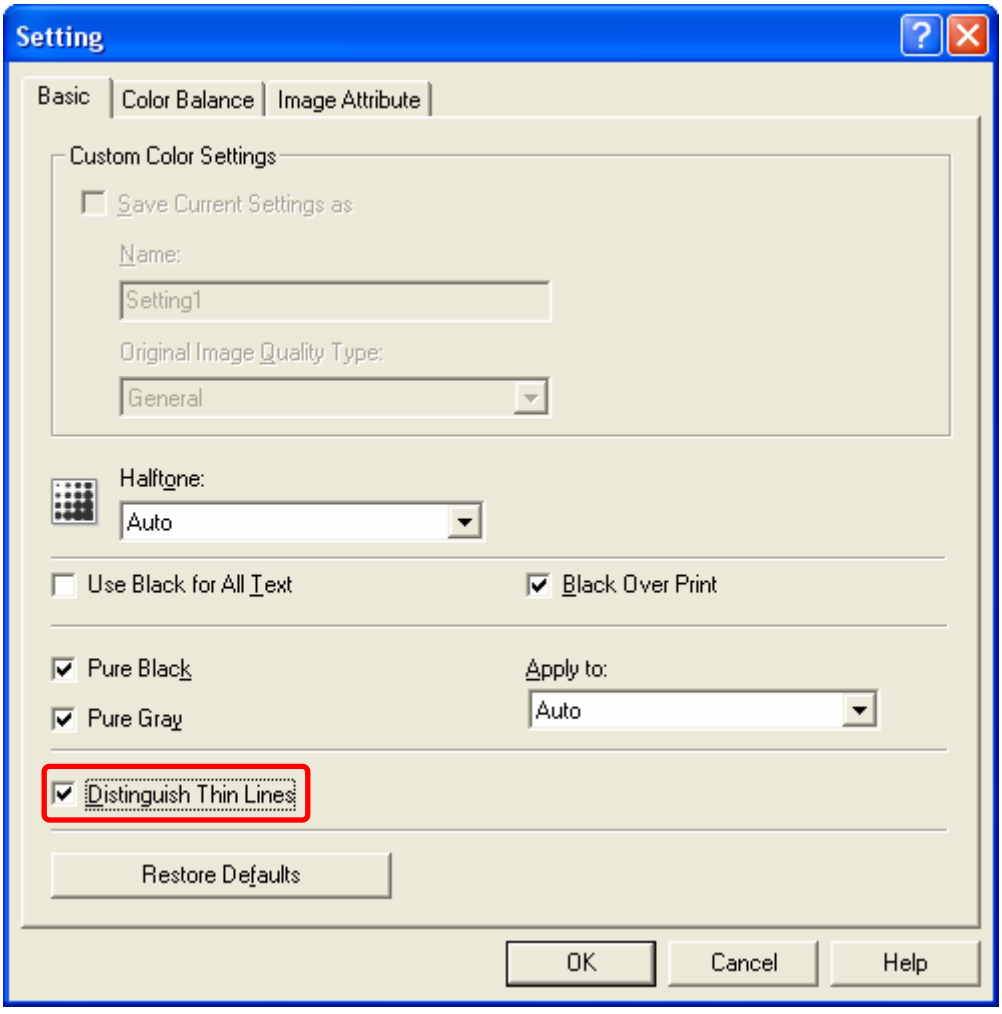
*Both the service technician and the user can perform all adjustments.

(1) Enable the "Distinguish Thin Line" option on the printer driver.

For Windows

PCL6 PS3

Open the property page of the printer driver. Press the [Setting] button in the "Image Quality" tab.
Mark the "Distinguish Thin Line" checkbox in the "Basic" tab.



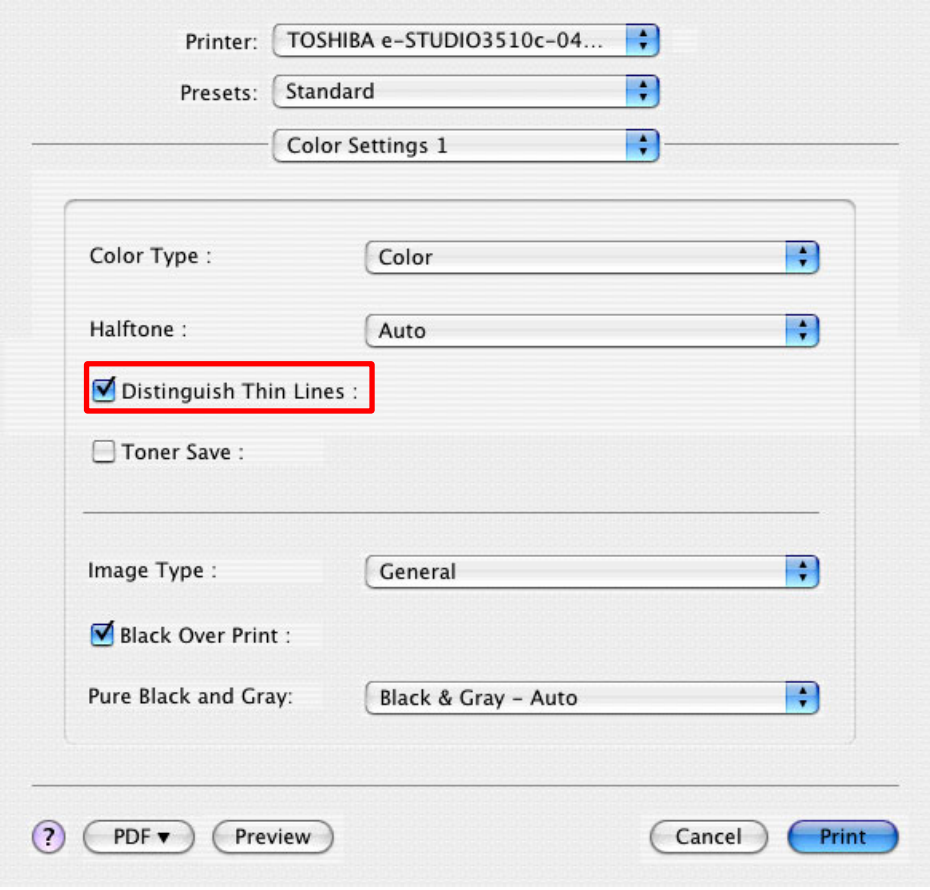
For Macintosh

Mac

Open the print dialog box. Enable the "Distinguish Thin Line" option.

* The menu to select varies according to the operating system. Refer to the table below and select the menu.

OS	Menu
8.6 / 9.x	"Color Settings 4" ⇨ "Distinguish Thin Lines"
10.2.x	"Printer Features" ⇨ "Feature Sets: Color settings 1" ⇨ "Distinguish Thin Lines"
10.3.x / 10.4.x	"Color Settings 1" ⇨ "Distinguish Thin Lines"



❑ Precautions after the completion of the adjustment

Performing this adjustment on thin lines may not provide satisfactory results. In this case, it is recommended to perform the adjustment in conjunction with 3.14 To Clearly Print Light-Colored Thin Lines or Text be made.

3.17 To Decrease the Image Density and Save Toner

(To Print in the Toner Save Mode)

Before the adjustment

Default printing.

After the adjustment

Printing is performed, while the toner is being saved.

❑ Explanation

The e-STUDIO2500c/3500c/3510c offers a toner save mode. It is intended to automatically decrease the image density and reduce the amount of toner used. Change the option on the printer driver and perform printing in the toner save mode, for instance, if a large number of copies have to be printed, or if the image density is too high.

❑ Procedures

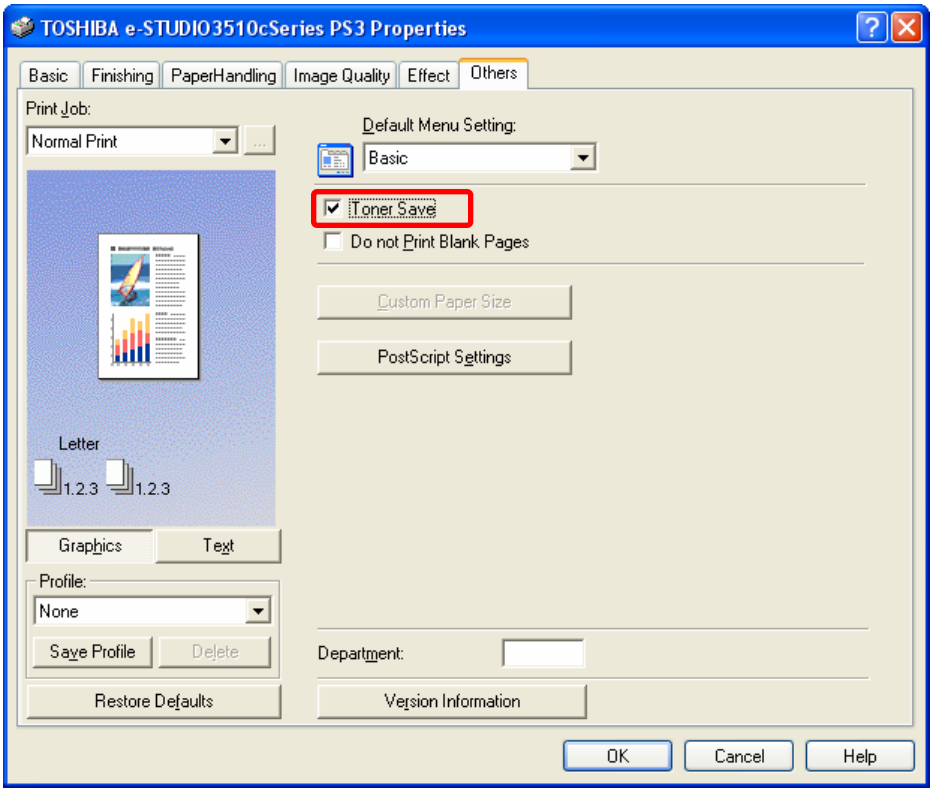
*Both the service technician and the user can perform all adjustments.

(1) Enable the "Toner Save" option on the printer driver.

For Windows

PCL6 PS3

Open the property page of the printer driver. Mark the "Toner Save" checkbox in the "Others" tab.



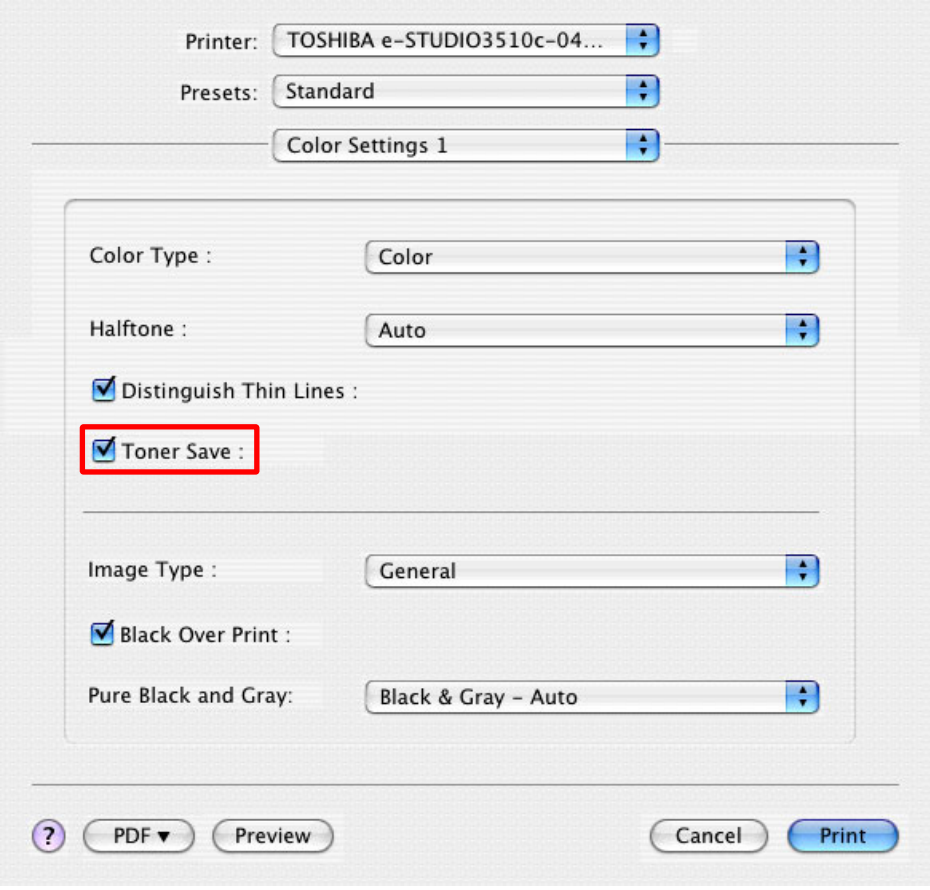
For Macintosh

Mac

Open the print dialog box. Enable the "Toner Save" option.

* The menu to select varies according to the operating system. Refer to the table below and select the menu.

OS	Menu
8.6 / 9.x	"Printing Modes" ⇨ "Toner Save"
10.2.x	"Printer Features" ⇨ "Printing Modes" ⇨ "Toner Save"
10.3.x / 10.4.x	"Color Settings 1" ⇨ "Toner Save"



❑ Precautions after the completion of the adjustment

The adjustment may possibly provide the image density lower than the user desires, when printing is performed in the toner save mode. Therefore, carefully perform the adjustment, while checking the printouts.

❑ Remarks

The print density in the toner save mode can also be adjusted. For further information regarding the adjustment procedures, refer to 3.18 To Adjust the Image Density in the Toner Save Mode.

3.18 To Adjust the Image Density in the Toner Save Mode

Before the adjustment

The image density is too dark, even when printing is performed in the toner save mode.

After the adjustment

The image density in the toner save mode is adjustable, as desired.

❑ Explanation

The e-STUDIO2500c/3500c/3510c offers a toner save mode. It is intended to automatically decrease the image density and reduce the amount of toner used. Adjust the upper limit of the image density in the toner save mode, in order to obtain the desired image density requested by a particular user.

❑ Procedures

* The service technician must perform all adjustments.

PCL6 PS3 Mac

(1) Enter adjustment mode [05]. Change the value to adjust the image density in the toner save mode.

* The [05] code to use varies, depending on whether to adjust the image quality on Full Color or Twin Color printing or on Black and White printing. Use either of the procedures below corresponding to the type of original to print.

To adjust the image quality in Full Color or Twin Color printing

("Auto," "Color" or "Twin Color" is selected from among the "Color" options on the PCL6 or PS3 printer driver. "Auto," "Color" or "Twin Color" is selected from among the "Color Type" options on Macintosh.)

* The "Color" options are available in the "Basic" tab on the PCL6 and PS3 printer drivers. The "Color Type" options are available in the "Color Settings 1" menu in the print dialog box on Macintosh.

(a) Enter adjustment mode [05]. Change the value for code [1055] or [1057] to adjust the upper limit of the image density in the toner save mode.

* Printing on Macintosh is performed in PostScript. (See the "PS3" row in the table below.)

PDL	[05] code	Recommended value	Acceptable value range	Default
PS3	05-1055	Set a value smaller than 176 to decrease the density. Set a value larger than 176 to increase the density.	0 to 255	176
PCL6	05-1057			

* Set the value in increments of approximately 10, while checking the printouts until the optimum value is obtained.

To adjust the image quality on Black and White printing

("Black and White" is selected from among the "Color" options on the PCL6 or PS3 printer driver. "Mono" is selected from among the "Color Type" options on Macintosh.)

* The "Color" options are available in the "Basic" tab on the PCL6 and PS3 printer drivers. The "Color Type" options are available in the "Color Settings 1" menu in the print dialog box on Macintosh.

(a) Enter adjustment mode [05]. Increase the value for code [664] or [665] to adjustment the upper limit of the image density in the toner save mode.
* Printing on Macintosh is performed in PostScript. (See the "PS3" row in the table below.)

PDL	[05] code	Recommended value	Acceptable value range	Default
PS3	05-664	Set a value smaller than 176 to decrease the density. Set a value larger than 176 to increase the density.	0 to 255	176
PCL6	05-665			

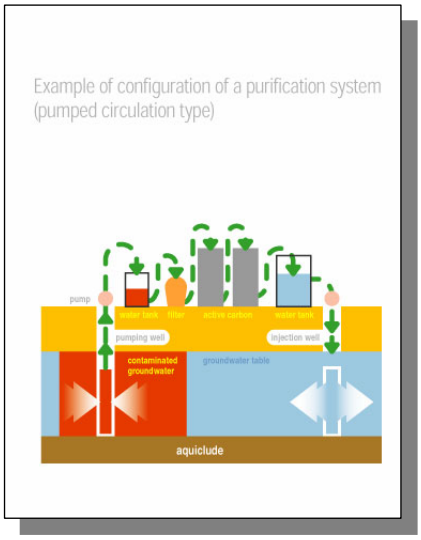
* Set the value in increments of approximately 10, while checking the printouts until the optimum value is obtained.

❑ Precautions after the completion of the adjustment

The adjustment may possibly cause an increase of the amount of toner used (if the image density is increased) or provide faint print images (if the image density is decreased). Therefore, carefully perform the adjustment, while checking the printouts.

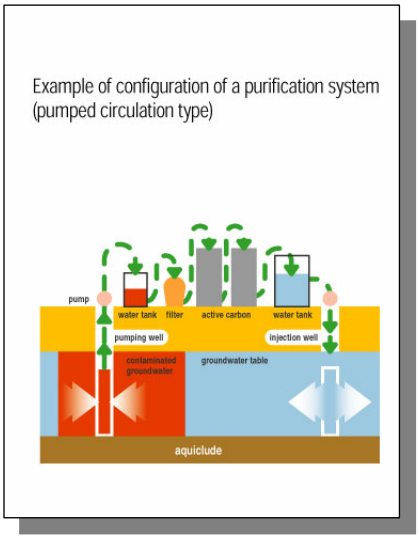
3.19 To Print Illegible Gray or Colored Text in Black

Before the adjustment



Gray, yellow and cyan text is illegible on the printouts.

After the adjustment



The gray, yellow or cyan text is printed in black. This makes it more legible on the printouts.

❑ Explanation

Text may look illegible on the printout, depending on the hues of the background and the text contained in the original, particularly, when printing an original containing yellow, light blue or gray text on a light-colored background. In addition, when a full-color original is printed in the Black and White mode, the colored text may turn gray on the printout and eventually become illegible. In this case, change the option on the printer driver, in order to reproduce the colored text (except the white text) in black and make it more legible on the printout.

* This adjustment will have an effect only on printing on a Windows PCL6 or PS3 emulation printer driver. (This adjustment cannot be performed on a Macintosh printer driver.)

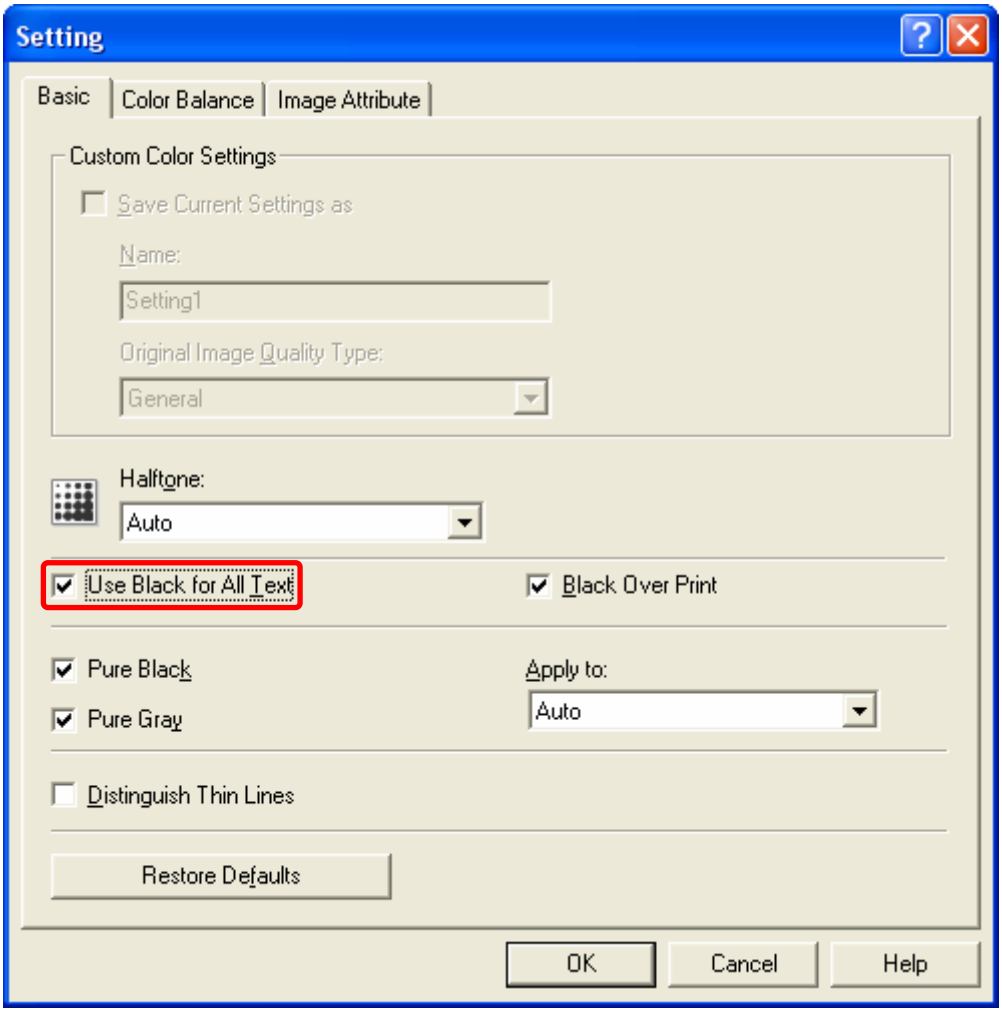
❑ Procedures

* Both the service technician and the user can perform all adjustments.

PCL6 PS3

(1) Open the property page of the printer driver. Press the [Setting] button in the "Image Quality" tab. Mark the "Use Black for All Text" checkbox in the "Basic" tab.

* This adjustment will be effective, only if a file created on a general application, such as Microsoft Office, is printed in PostScript (PS3). It may not be effective, if a file created on a graphic application (e.g. Illustrator) or a DTP application (e.g. QuarkXPress) is printed, or a PDF file created on these applications is printed.



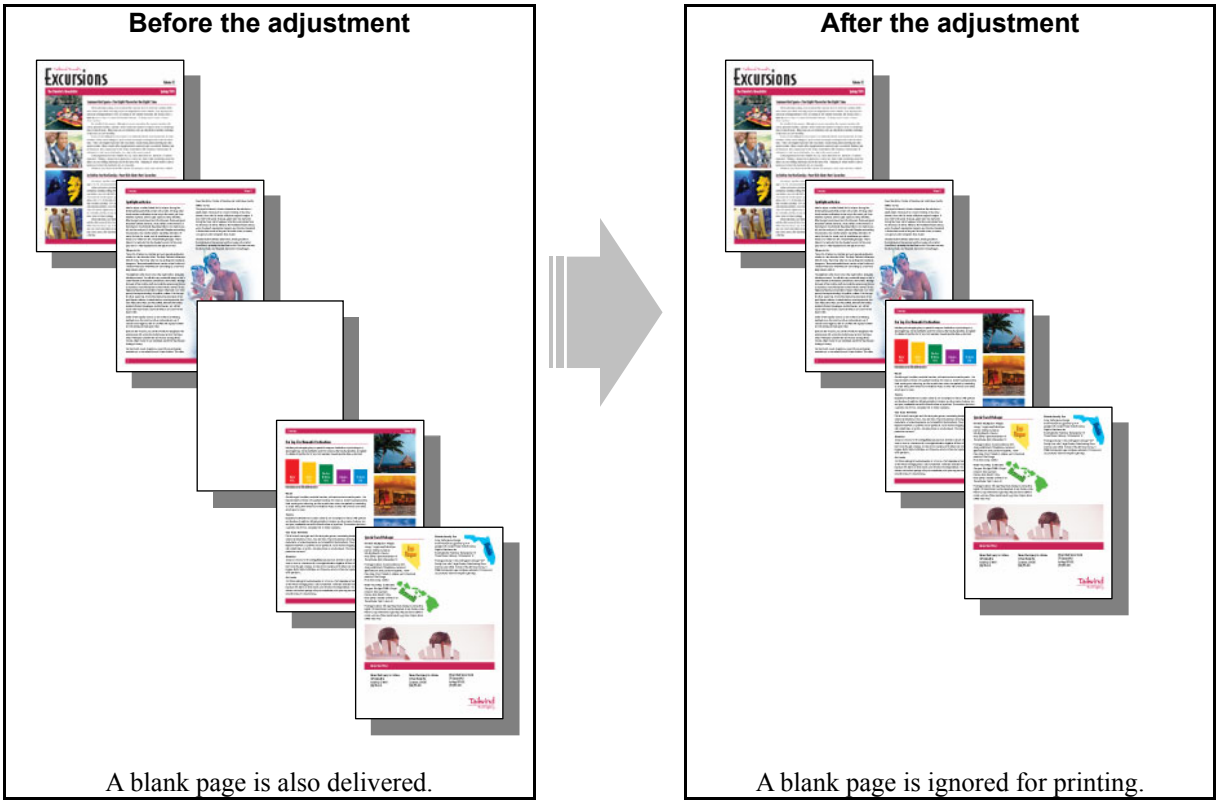
❑ Precautions after the completion of the adjustment

Nothing in particular.

❑ Remarks

Not all colored text may be printed in black, depending on the type of text (e.g. text larger than 72 points).

3.20 To Ignore Blank Pages for Printing



❑ Explanation

Some applications may be designed to automatically insert blank pages for laying out the pages of a document.

Change the option on the printer driver, in order to ignore all blank pages for printing.

❑ Procedures

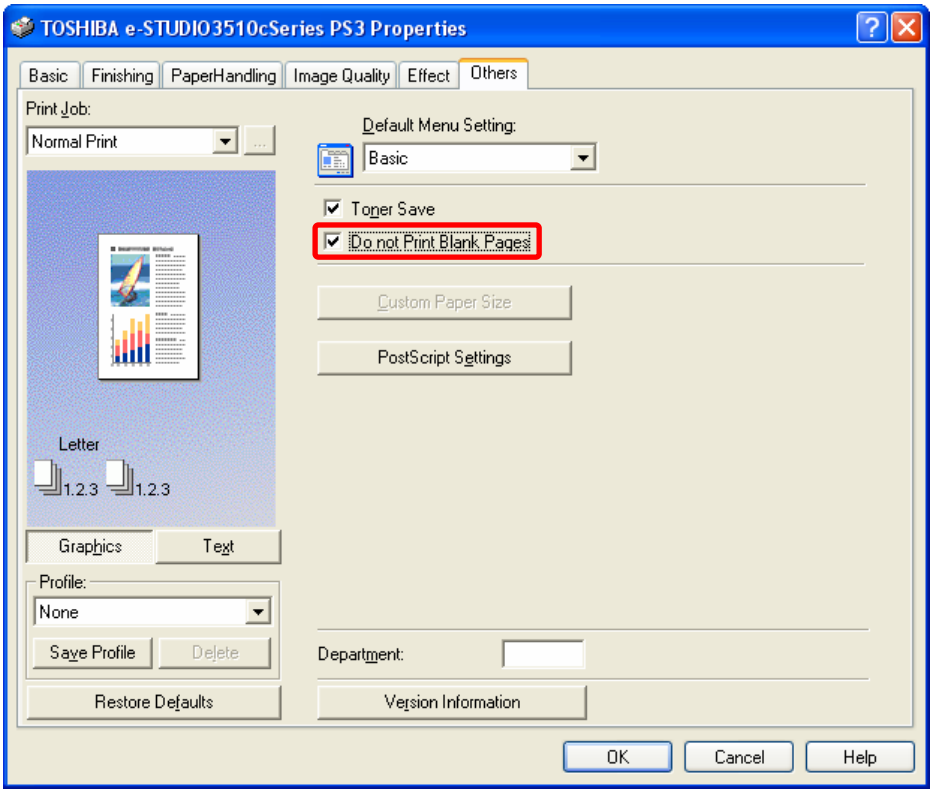
*Both the service technician and the user can perform all adjustments.

(1) Enable the "Do not Print Blank Pages" option on the printer driver.

For Windows

PCL6 PS3

Open the property page of the printer driver. Mark the "Do not Print Blank Pages" checkbox in the "Others" tab.



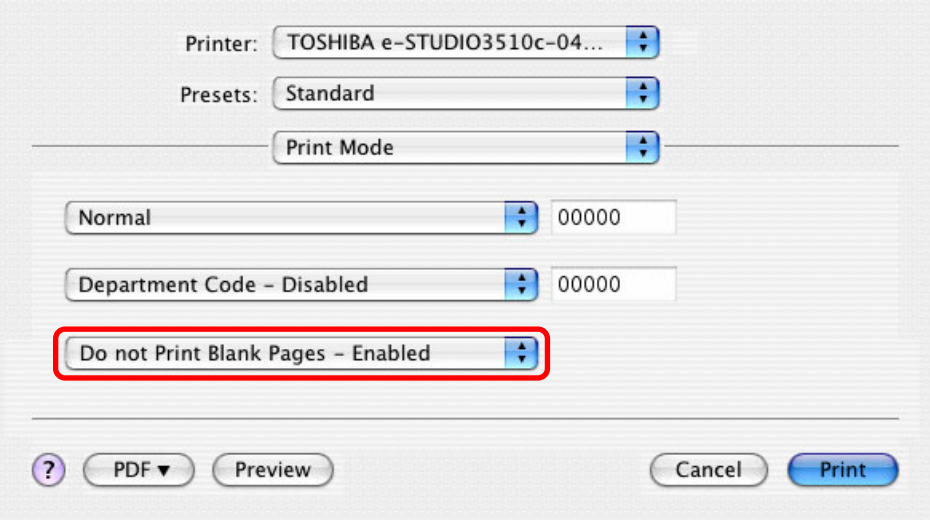
For Macintosh

Mac

Open the print dialog box. Enable the "Do not Print Blank Pages" option.

* The menu to select varies according to the operating system. Refer to the table below and select the menu.

OS	Menu
8.6 / 9.x	"Printing Modes" ⇨ "Do not Print Blank Pages"
10.2.x	"Printer Features" ⇨ "Printing Modes" ⇨ "Do not Print Blank Pages"
10.3.x / 10.4.x	"Print Mode" ⇨ "Do not Print Blank Pages"



❑ Precautions after the completion of the adjustment

The adjustment may not possibly operate the following options as programmed. Therefore, pay special attention to the combination of options.

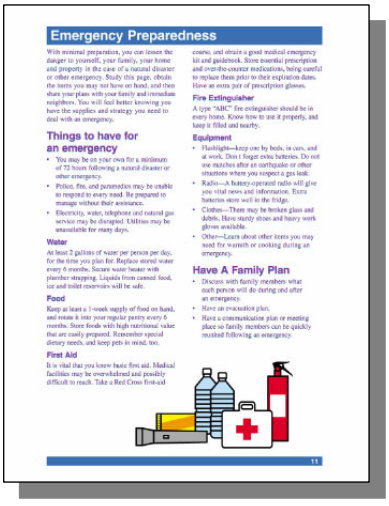
- Booklet printing
- N-up printing
- Use Front Cover
- Use Back Cover
- Interleave Pages

❑ Remarks

If any data are inserted in the header or footer of a particular page on Excel or Word, even though no data are present in the body, the page will not be recognized as a blank page. The header or footer will be printed out.

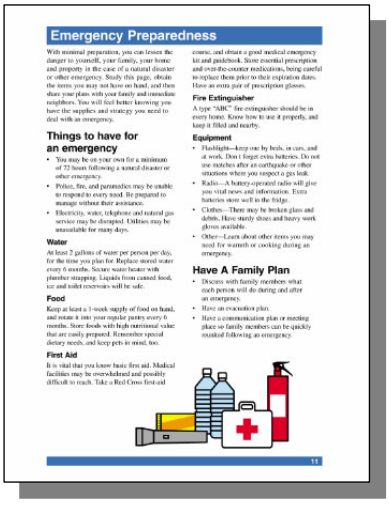
3.21 To Sharply Print Black Text

Before the adjustment



Text looks black on the monitor. But the hue will vary, if it is printed out in the Full color mode.

After the adjustment



The hue of the text is nearly matched with the black hue on the monitor.

❑ Explanation

Text looks black on the monitor. But if it is printed in the Full color mode (with "Auto" selected from among the "Color" options), all color toners (C, M, Y and K) will be used to print it, depending on the application in use. As a result, the black hue on the printout looks different from what the user desires. This problem is caused by the application specifications, not by the printer.

Particularly, the following factors may print black text using all color toners (C, M, Y and K) when a PDF file is printed out:

- The file of black text (CMY = 0%, K = 100%) is printed on the PCL6 printer driver.
- Black text is treated as image data instead of text data on the file.
- Black text is not defined as 100% black (RGB = 0% or CMY = 0%, K = 100%) on the file.

Change the option on the printer driver or adjust the color balance, in order to nearly match the hue of the black text on the file, in which these factors may be included, with the black hue.

As a point to remember, determine whether the text to adjust is entered as an actual text (font) or as a graphic or image data.

❑ Procedures

*Perform the adjustment in accordance with the procedures below.

*Both the service technician and the user can use procedures (1) to (3).

*Only the service technician must use procedures (4) and (5).

(1) If printing is performed on a PCL6 printer driver, select a PS3 printer driver.

<Hint> If printing is performed on a PCL6 printer driver, or if a file or a graphic application created on a DTP application, such as Illustrator, QuarkXPress, FreeHand, or CorelDraw, is printed using the CMYK toners, or a high-definition PDF file created on these applications is printed, black text may not be converted into 100% black. But if printing is performed on a PS3 printer driver, black text can be printed in black, as shown on the file.

After printing on the PS3 driver, print and check the print image quality.
If further image quality adjustments are still necessary, use the next procedure.

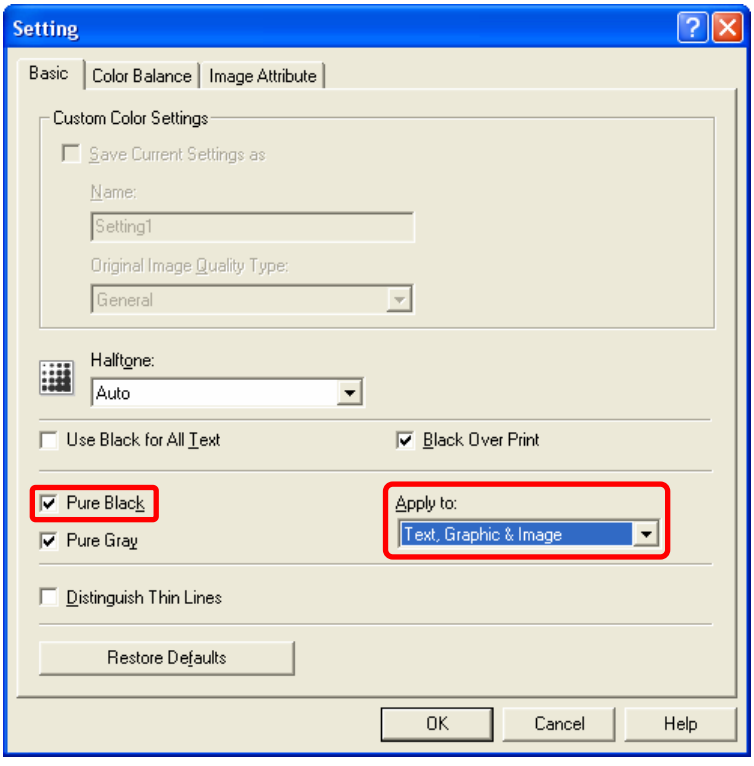
(2) Mark the "Pure Black" checkbox on the printer driver. Select "Text, Graphic & Image" from among the "Apply to" options.

<Hint> Text on the Web page may be raster data (image) created in GIF or JPEG format. Black-and-white data created in PDF format by scanning the original are also raster data. If the "Pure Black" checkbox is marked on the printer driver, "Auto" is selected from among the "Apply to" options by default. Raster data are handled as an image, which is intended to improve the texture, and the 4 color toners (C, M, Y and K) will be used to print black. If "Text, Graphic & Image" is selected from among the "Apply to" options, only the K toner will be used to print black on raster data.

For Windows

PCL6 PS3 * This adjustment will have an effect only on Black and white mode printing.

Open the property page of the printer driver. Press the [Setting] button in the "Image Quality" tab.
Mark the "Pure Black" checkbox in the "Basic" tab. Select "Text, Graphic & Image" from among the "Apply to" options.



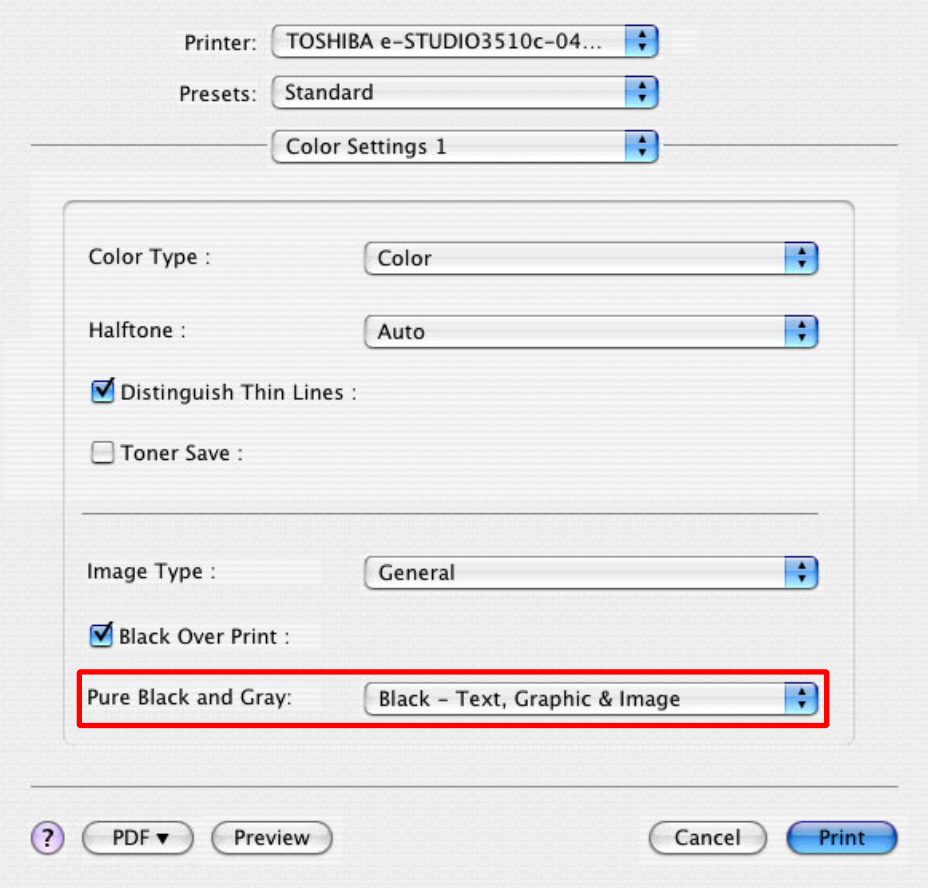
For Macintosh

Mac * This adjustment will have an effect only on full-color printing.

Open the print dialog box. Select "Black – Text, Graphic & Image" from among the "Pure Black and Gray" options.

*The menu to select varies according to the operating system. Refer to the table below and select the menu.

OS	Menu
8.6 / 9.x	"Color Settings 2" ⇨ "Pure Black and Gray"
10.2.x	"Printer Features" ⇨ "Feature Sets: Color settings 2" ⇨ "Pure Black and Gray"
10.3.x / 10.4.x	"Color Settings 1" ⇨ "Pure Black and Gray"



After changing the option on the printer driver, print and check the print image quality.

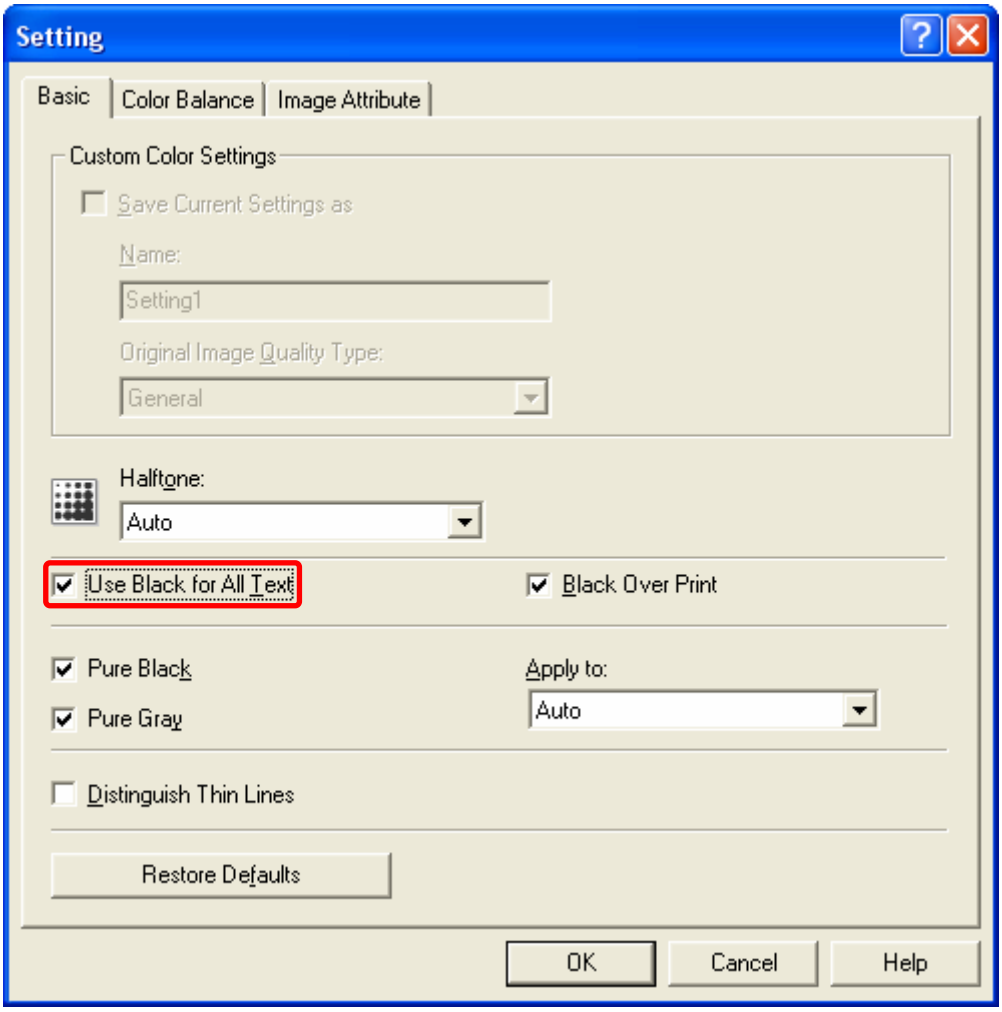
If further image quality adjustments are still necessary, use the next procedure.

PCL6 PS3

(3) Open the property page of the printer driver. Press the [Setting] button in the "Image Quality" tab.
Mark the "Use Black for All Text" checkbox in the "Image Quality" tab.

* This adjustment will have an effect only on printing on a Windows PCL6 or PS3 emulation printer driver. (This adjustment cannot be performed on a Macintosh printer driver.)

* This adjustment will be effective, only if a file created on a general application, such as Microsoft Office, is printed in PostScript (PS3). It may not be effective, if a file created on a graphic application (e.g. Illustrator) or a DTP application (e.g. QuarkXPress) is printed, or a PDF file created on these applications is printed.



<Note> The adjustment may provide all colored text in black.

After changing the option on the printer driver, print and check the print image quality.
If further image quality adjustments are still necessary, the service technician must use the next procedure, because text may not be defined as 100% black on the file.

PCL6 PS3 Mac * This adjustment will have an effect only on Black and white mode printing.

(4) Enter adjustment mode [05]. Change the values for codes [8210 to 8215] or [8252 to 8257] to adjust the threshold values for "Pure Gray" and "Pure Black" (to adjust the area to print only using the K toner).

• Adjust the value for [05] code corresponding to the print option to be applied (Apply to, PDL, Item, Subcode (Image quality type)).

* Printing on Macintosh is performed in PostScript. (See the "PS3" row in the table below.)

* The effect with PureBlack/Gray selected will be invalid, if "Photo" is selected from among the "Image Quality Type" options and CIE-Based RGB/CMYK data are printed. The effect will be invalid, if Device CMYK data are printed, regardless of which "Image Quality Type" option is selected.
The effect will be valid, only if "General," "Presentation" or "Line Art" is selected and CIE Based RGB/CMYK data or Device RGB data are printed.

Apply to	PDL	Item	[05] code	Subcode	Recommended value	Acceptable value range	Default
Text	PCL6	PureBlack	05-8210	0/1/2/3	Set a value smaller than the default to decrease the area to print only using the K toner. Set a value larger than the default to increase the area to print only using the K toner.	1 to 15	8
		PureGray	05-8213	0/1/2/3			
	PS3	Device RGB PureBlack/Gray	05-8252	0/1/2/3		113 to 143 (121 to 143)	128
		CIE-Based PureBlack/Gray	05-8255	0/1/2/3			
Graphic	PCL6	PureBlack	05-8211	0/1/2/3		1 to 15	1/1/1/8
		PureGray	05-8214	0/1/2/3			
	PS3	Device RGB PureBlack/Gray	05-8254	0/1/2/3		113 to 143 (128 to 143) *1 (121 to 143) *2	128
		CIE-Based PureBlack/Gray	05-8257	0/1/2/3			
Image	PCL6	PureBlack	05-8212	0/1/2/3		1 to 15	1/1/1/8
		PureGray	05-8215	0/1/2/3			
	PS3	Device RGB PureBlack/Gray	05-8253	0/1/2/3		113 to 143 (128 to 143) *1 (121 to 143) *2	128
		CIE-Based PureBlack/Gray	05-8256	0/1/2/3			

* The values in the parentheses in the acceptable range column indicate valid values, which provide the effect. "*1" is a valid value, if "General," "Photograph" or "Presentation" is selected from among the "Image Quality Type" options. "*2" is a valid value, if "Line Art" " is selected.

* The subcode varies according to the Image quality type where the adjustment is performed. Refer to the table below and set the subcode for the Image quality type to adjust.

Subcode	Image Quality Type
0	General
1	Photographic
2	Presentation
3	Line Art

<Hint> Refer to the information below to select "Item," in order to perform the adjustment on a PS3 printer driver:

- PDF data: CIE-Based RGB/CMYK data and Device RGB/CMYK data
- Data on Windows and Microsoft Office: Device RGB data in most cases
- Data on Mac OS X: CIE-Based RGB/CMYK data in many cases

<Note> If the graphic and image options are changed, the adjustment may possibly cause the unnatural hue of gradational and photo images, and the inadequate reproducibility of gradations. Therefore, carefully perform the adjustment, while checking the printouts.

PCL5c PS3 Mac * This adjustment will have an effect only on Black and white mode printing.

(5) Enter adjustment mode [05]. Change the values for codes [8050 to 8065] to adjust the color density (Color balance).

• Adjust the value for [05] code corresponding to the print option to be applied (PDL and Halftone).

Ex.: • When printing on Windows is performed with the following options selected: PCL6, Image Quality Type = General, Halftone = Auto

> Text area
Change the values for Y: 05-8062, M: 05-8063, C: 05-0864 and K: 05-8065.

> Graphic and image area
Change the values for Y: 05-8058, M: 05-8059, C: 05-8060 and K: 05-8061.

• When printing on Macintosh is performed with the following option selected: Image Type = Photograph, Halftone = Smooth

> Change the values for Y: 05-8050, M: 05-8051, C: 05-8052 and K: 05-8053.

*Printing on Macintosh is performed in PostScript. (See the "PS3" row in the table below.)

*The hue of the black text printed using all color toners (C, M, Y and K) will look much clearer, if the amount of the C (cyan) toner used is larger than the M (magenta) or Y (yellow) toner. Remember that adjusting the density of K (black) does not affect the hue of the black text, if all color toners are used to print the text.

Color to adjust	PDL	Halftone	[05] code	Subcode	Recommended value	Acceptable value range	Default
Y (Yellow)	PCL5c	Smooth	05-8058	0/1/2	Set a value larger than 128 to increase the density. Set a value smaller than 128 to decrease the density.	0 to 255	128
		Detail	05-8062	0/1/2			
	PS3	Smooth	05-8050	0/1/2			
		Detail	05-8054	0/1/2			
M (Magenta)	PCL5c	Smooth	05-8059	0/1/2			
		Detail	05-8063	0/1/2			
	PS3	Smooth	05-8051	0/1/2			
		Detail	05-8055	0/1/2			
C (Cyan)	PCL5c	Smooth	05-8060	0/1/2			
		Detail	05-8064	0/1/2			
	PS3	Smooth	05-8052	0/1/2			
		Detail	05-8056	0/1/2			
K (Black)	PCL5c	Smooth	05-8061	0/1/2			
		Detail	05-8065	0/1/2			
	PS3	Smooth	05-8053	0/1/2			
		Detail	05-8057	0/1/2			

*Set the value in increments of approximately 20, while checking the printouts until the optimum value is obtained.

* "Halftone" refers to how halftones are printed. Two options are available: "Smooth" which is intended to improve the reproducibility of gradation and "Detail" which is intended to print halftones in details (with the high frequency).
The halftone option to be applied in printing can be selected from among the "Halftone" options on the printer driver (Windows) or in the print dialog box (Macintosh).
"Auto" is selected from among the "Apply to" options by default. It is intended to automatically select "Smooth" or "Detail" in accordance with "Apply to" of the halftone option, the selected "Color" and "Image Quality Type" options, as described by the table below.

Apply to	"Color" and "Image Quality Type" options					
	Auto/Color				Black and White	Twin Color
	General	Photograph	Presentation	Line Art		
Text	Detail	Detail	Detail	Detail	Detail	Detail
Graphic (Illustration, line, etc.)	Smooth	Smooth	Smooth	Detail	Detail	Smooth
Image (Photograph, etc.)	Smooth	Smooth	Smooth	Detail	Smooth	Smooth

* The subcode varies according to the area where the density is adjusted. Refer to the table below and set the subcode for the area to be adjusted.

Subcode	Area where the density is adjusted
0	Low-density area
1	Medium-density area
2	High-density area

<Note>

- This adjustment changes the values set in the MFP. Therefore, it will affect every user who uses the printer by connecting it to the MFP. After the adjustment, the values changed will be applied to all printouts for the "Image Quality Type" and "Halftone" options. (For instance, if the value for [05] code for PCL6 and Smooth is changed, it will be applied to printing performed with PCL6 and Halftone = "Smooth" (or "Auto") selected.) Carefully perform the adjustment, being aware that the image quality of all future printouts will be changed, when printing out originals other than the one that is used for the adjustment.

- This code is commonly used in the Twin-color mode and the Color mode. After the adjustment, the values changed will be also applied to the image quality in the Color mode. When adjusting the image quality in the Twin-color mode, carefully perform the adjustment, being aware that the image quality of all future printouts will be changed, when performing printing in the Color mode.

❑ Precautions after the completion of the adjustment

The adjustment may possibly change the hue of the text and the image, such as a photo image, on the printout. Therefore, carefully perform the adjustment, while checking the printouts.

❑ Remarks

To check the definition of black text

When creating a PDF file, 100% black may not be defined as follows, depending on the application settings:

"100% black" indicates the following values:

- RGB data: RGB = 0%
- CMYK data: CMY = 0%, K = 100%

As a result, text, which should be defined as 100% black on the application, is not defined as 100% black on the saved PDF file. (A small percent of color data is defined.) Eventually, all color toners (C, M, Y and K) will be used to print it.
If printing is performed on a PCL6 printer driver, print data are captured as RGB data. If black text is defined as 100% black (CMY=0%, K = 100%) for CMYK data on a PDF file, it will not be converted into 100% black (RGB = 0%) for RGB data on Acrobat, and it will be printed in colors. (It is recommended to print CMYK data on a PS3 printer driver instead of a PCL6 printer driver.)
Use "Output Preview" on Acrobat 7.0 Professional to examine the color definition on the PDF file.

* For further information regarding the Output Preview, refer to an appropriate manual or the Help menu of Acrobat 7.0 Professional.

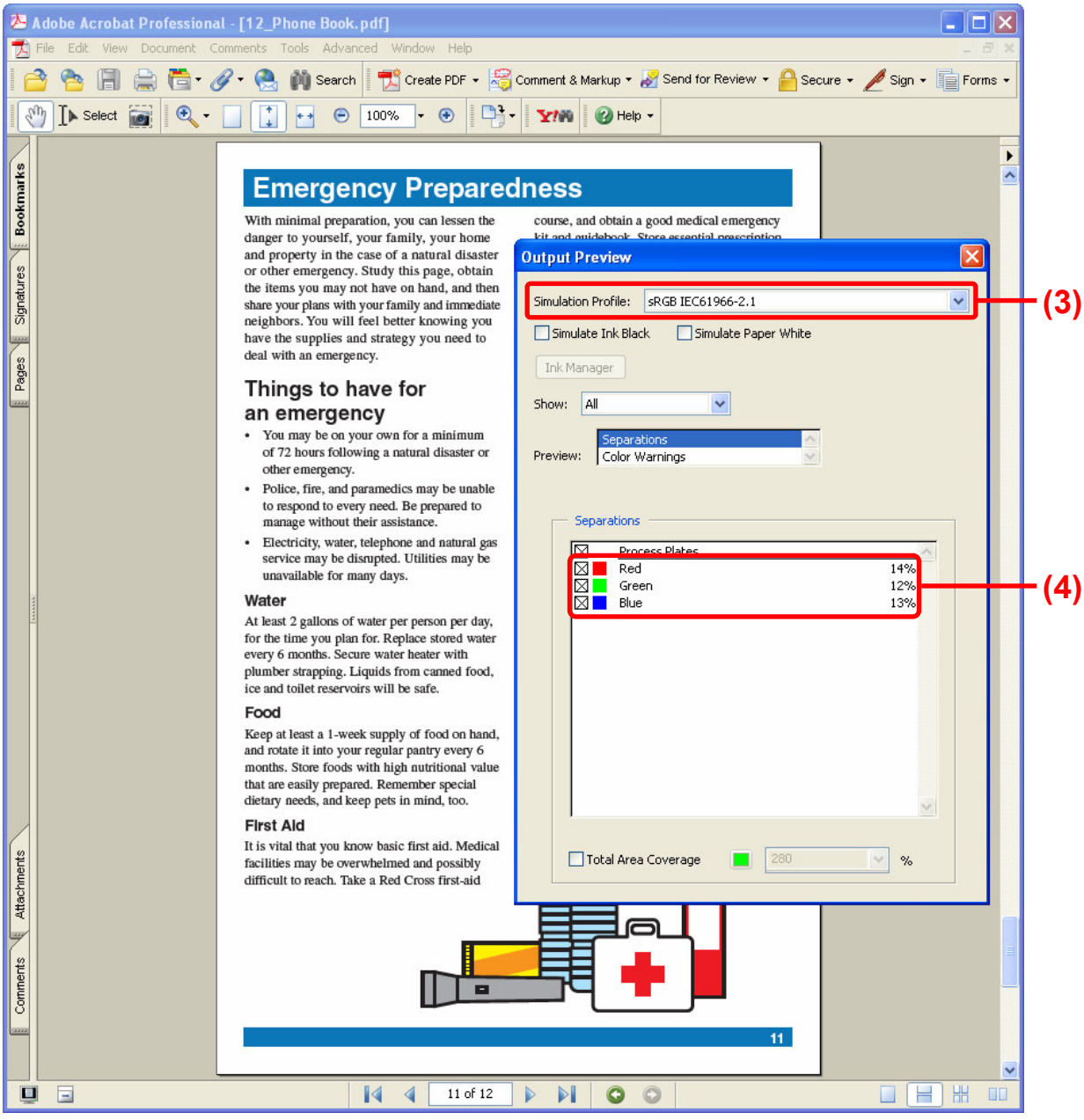
(1) Open a PDF file on Acrobat 7.0 Professional.

(2) Select "Output Preview" in the "Advanced" menu.

(3) Select a profile from among the "Simulation Profile" options.

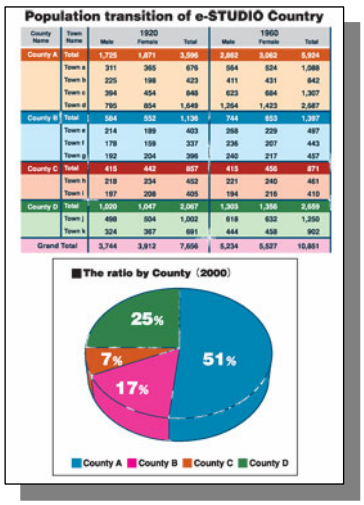
* Select the profile to use for the Monitor Simulation, in order to print RGB data, and the one to use for the Ink Simulation, in order to print CMYK data from among the "Simulation Profile" options.

(4) Move the cursor over the data to check the color definition. Then the color calibration will be displayed in percentage on "Separations."



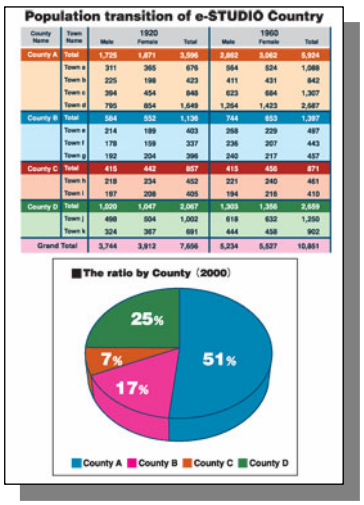
3.22 To Prevent Dark Toner from Coming Off

Before the adjustment



The dark toner comes off.

After the adjustment



The dark toner is securely fixed.

❑ Explanation

When highly colored lines, where a large accumulated amount of C, M, Y and K toners are used, are created on raster data (image), such as BMP, GIF, JPEG and TIFF, and printed on the rough surface of paper or thick paper, the toner may come off the paper. This is because the C, M, Y and K toners may be overlaid, the paper may be extremely thick or the surface may be rough, and the amount of toner used may be insufficient. Adjust the limit value of the maximum amount of toner used, in order to avoid a toner fixing problem.

This adjustment does not affect a single color of C, M, Y and K, or bright colors such as red and green.

❑ Procedures

*The service technician must perform all adjustments.

PCL6 PS3 Mac * This adjustment will have an effect only on Auto or Color mode printing.

(1) Enter adjustment mode [05]. Decrease the values for code [8076 to 8078], [8080 to 8088] or [1092 to 1096] to reduce the limit value of the maximum amount of toner used.

• Adjust the value for [05] code corresponding to the print option to be applied (Paper type, Image quality type, Halftone, and PDL).

*Printing on Macintosh is performed in PostScript. (See the "PS3" row in the table below.)

Paper type	Image quality type	Halftone	[05] code	Subcode (PDL)	Recommended value	Acceptable value range	Default
Special 1	General/Photograph/ Presentation	Auto/Smooth	05-8076	PCL6: 0 PS3: 1	Set a value smaller than the default.	0 to 255	113
		Detail	05-8085				
	Line Art	Smooth	05-8076				
		Auto/Detail	05-8085				
Special 2	General/Photograph/ Presentation	Auto/Smooth	05-8077				113
		Detail	05-8086				
	Line Art	Smooth	05-8077				
		Auto/Detail	05-8086				
Recycled paper	General/Photograph/ Presentation	Auto/Smooth	05-8078				128
		Detail	05-8087				
	Line Art	Smooth	05-8078				
		Auto/Detail	05-8087				
Plain paper	General/Photograph/ Presentation	Auto/Smooth	05-8080				128
		Detail	05-1092				
	Line Art	Smooth	05-8080				
		Auto/Detail	05-1092				
Thick 1	General/Photograph/ Presentation	Auto/Smooth	05-8081				113
		Detail	05-1093				
	Line Art	Smooth	05-8081				
		Auto/Detail	05-1093				
Thick 2	General/Photograph/ Presentation	Auto/Smooth	05-8082				113
		Detail	05-1094				
	Line Art	Smooth	05-8082				
		Auto/Detail	05-1094				
Thick 3	General/Photograph/ Presentation	Auto/Smooth	05-8083				113
		Detail	05-1095				
	Line Art	Smooth	05-8083				
		Auto/Detail	05-1095				
OHP	General/Photograph/ Presentation	Auto/Smooth	05-8084				128
		Detail	05-1096				
	Line Art	Smooth	05-8084				
		Auto/Detail	05-1096				

* Set the value in increments of approximately 30, while checking the printouts until the optimum value is obtained.

❑ Precautions after the completion of the adjustment

The adjustment may possibly cause dark areas such as shades on photo images to look unnaturally faint. Therefore, carefully perform the adjustment, while checking the printouts.

3.23 To Register the Image Quality Adjusted Corresponding to a Preference
(To use the Custom Color Settings)

❑ Explanation

The option to obtain the desired print image quality can be registered as Custom Color Settings.

* This adjustment will have an effect only on printing on a Windows PCL6 or PS3 emulation printer driver. (This adjustment cannot be performed on a Macintosh printer driver.)

❑ Procedures

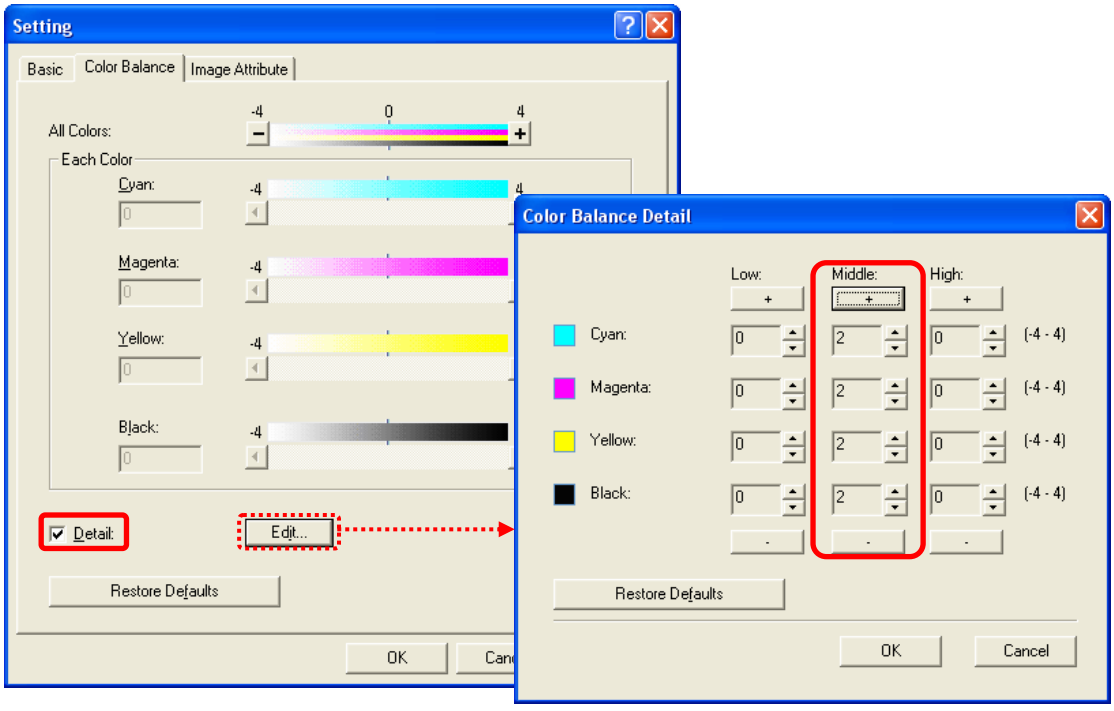
* Both the service technician and the user can perform all adjustments.

* As an example of using Customer Color Settings, if "Presentation" is selected as the base type from among the "Image Quality Type" options, the procedure below is to set a larger value for the Medium density of the color in the "Color Balance Details" option, and register the name of "Draft agenda."

PCL6 PS3

(1) Open the property page of the printer driver in the "Printers and Faxes" folder. Press the [Setting] button in the "Image Quality" tab. Change the options in the "Basic," "Color Balance" and "Image Attribute" tabs, in order to obtain the desired print image quality.

Ex: Mark the "Detail" checkbox in the "Color Balance" tab. Press the [Edit] button.
Set the value for the Medium density of the color in the "Color Balance Details" option.



After setting the values, use the procedure.

PCL6 PS3

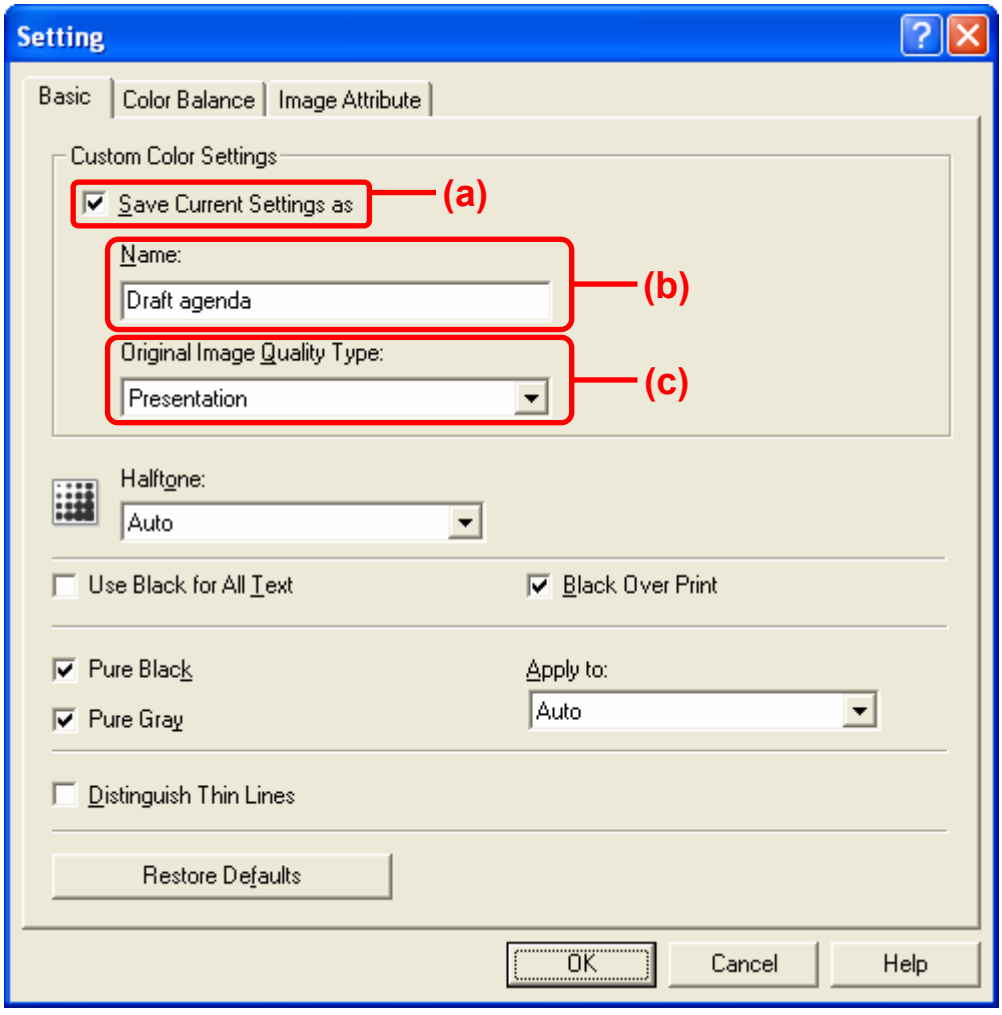
(2) Register the name for what has been specified in procedure (1), in the "Basic" tab in the "Setting" option.

• Use steps (a) to (c) to register the name.

(a) Mark the "Save Current setting as" checkbox in the "Custom Color Settings" option.

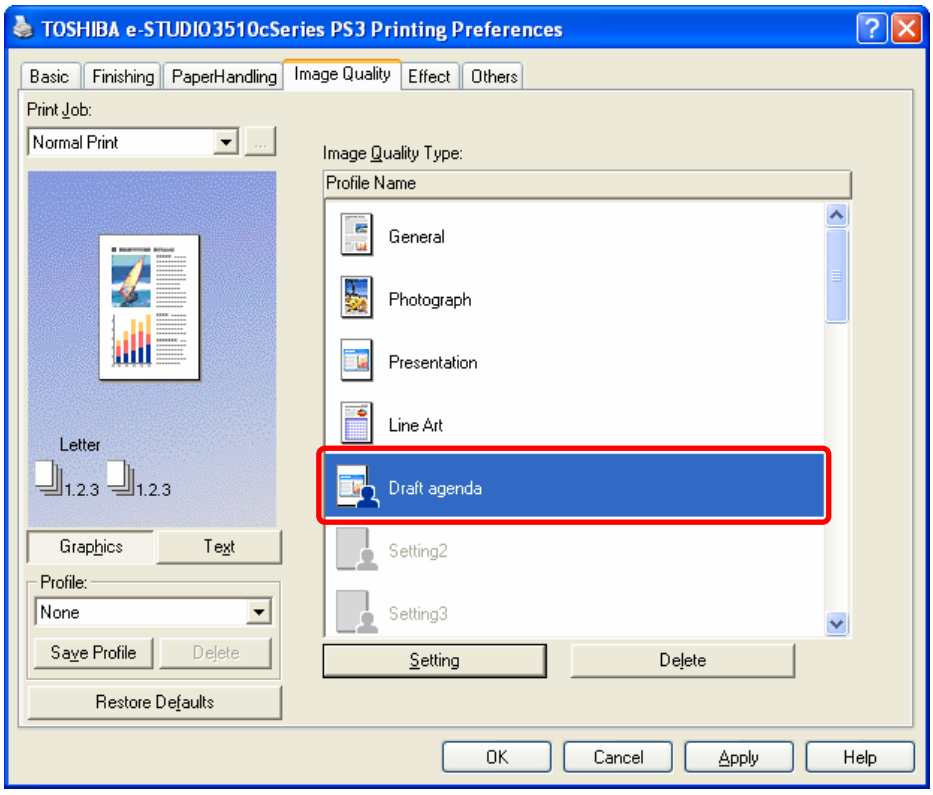
(b) Enter an optional name in the "Name" option.

(c) Select the type you would like to use as the base one from among the "Image Quality Type" options in "Original Image Quality Type."



After registering the name, open the property page of the printer driver. Make sure that the name created for the "Image Quality Type" option in the "Image Quality" tab has been registered.

* The icon of the base "Image Quality Type" will be displayed in the background of the icons for the registered Custom Color Settings.
(The icon of "Presentation" is displayed in the background as illustrated below.)



❑ Precautions after the completion of the adjustment

The Custom Color Settings indicate a condition where the default setting has been changed.
Adjusting the values in detail in the "Setting" option allows the user to register the desired print image quality.

❑ Remarks

The checkbox in the "Custom Color Settings" option will be effective, only if you login using a user name belonging to Administrator or Power Users (only on Windows NT4.0 / 2000 / XP / Server 2003), and open the property page of the printer driver in the "Printers and Faxes" folder.

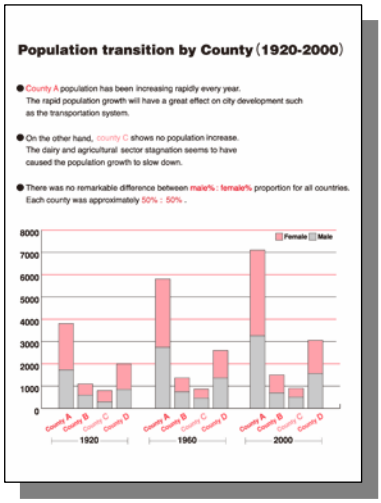
3.24 To Print a Full-Color Original in Two Colors

Before the adjustment

Population transition by County (1920-2000)
County A population has been increasing rapidly every year.
The rapid population growth will have a great effect on city development such as the transportation system.
On the other hand, county C shows no population increase.
The dairy and agricultural sector stagnation seems to have caused the population growth to slow down.
There was no remarkable difference between male% : female% proportion for all countries.
Each county was approximately 50% : 50% .
Female
Male
1920
1960
2000

The original is printed in the Full color mode.

After the Adjustment


Population transition by County (1920-2000)
County A population has been increasing rapidly every year.
The rapid population growth will have a great effect on city development such as the transportation system.
On the other hand, county C shows no population increase.
The dairy and agricultural sector stagnation seems to have caused the population growth to slow down.
There was no remarkable difference between male% : female% proportion for all countries.
Each county was approximately 50% : 50% .
Female
Male
1920
1960
2000

The areas other than black is printed in the same color (Red).

❑ Explanation

Select the twin color print mode option, in order to change colored text and lines on full-color original and print out the original.

* The Twin-color print mode particularly affects originals containing clear text and lines. It does not affect originals where gradations of photo images are required.

❑ Procedures

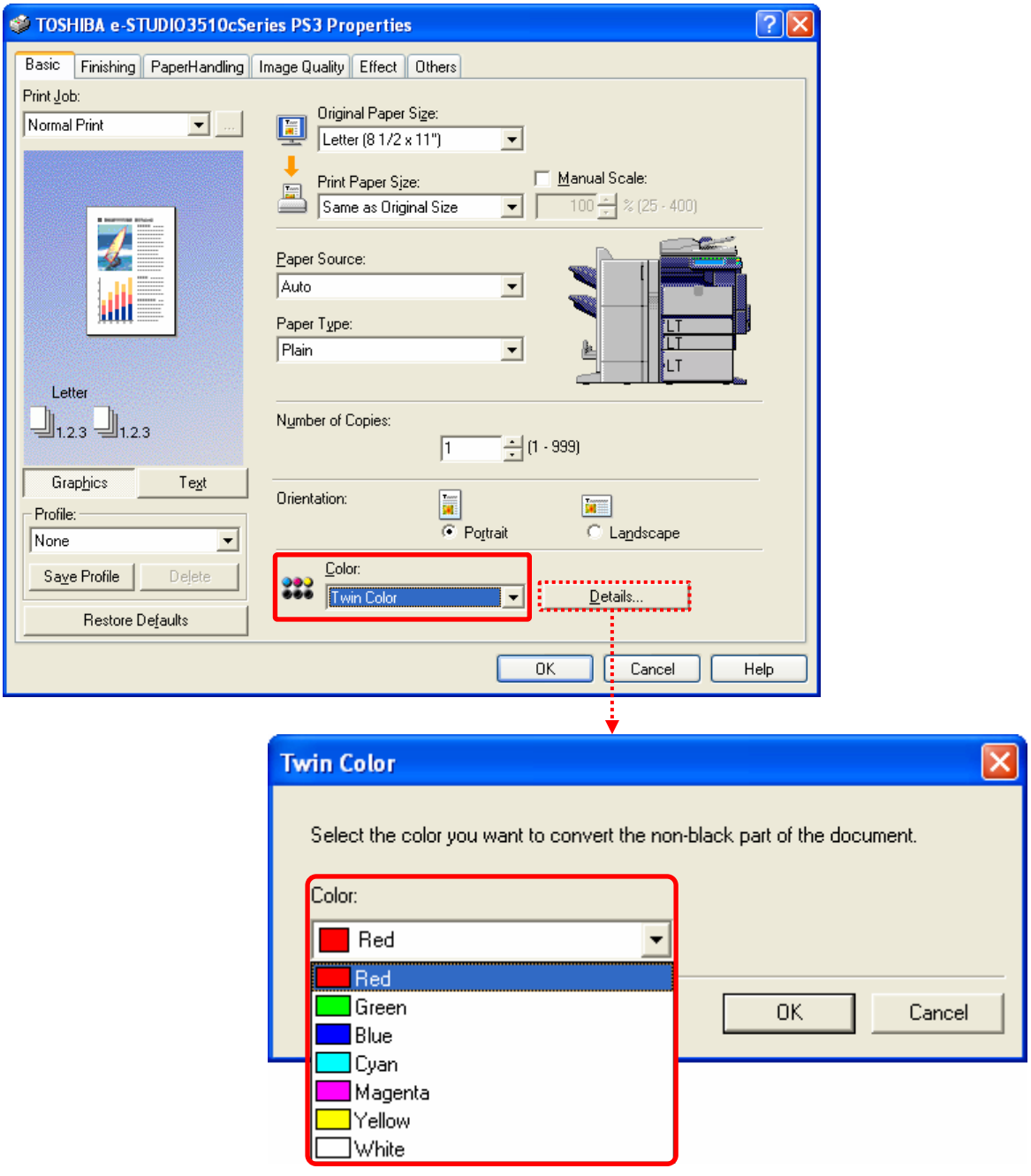
* Perform the adjustment in accordance with the procedures below.
* Both the service technician and the user can use procedure (1).
*Only the service technician must use procedures (2) and (3).

(1) Select "Twin Color" from among the "Color" options on the printer driver.

For Windows

PCL6 PS3

Open the property page of the printer driver. Select "Twin-Color" from among the "Color" options in the "Basic" tab. Press the [Details] button. Select the color to use for the area other than black, from among the "Color" options.



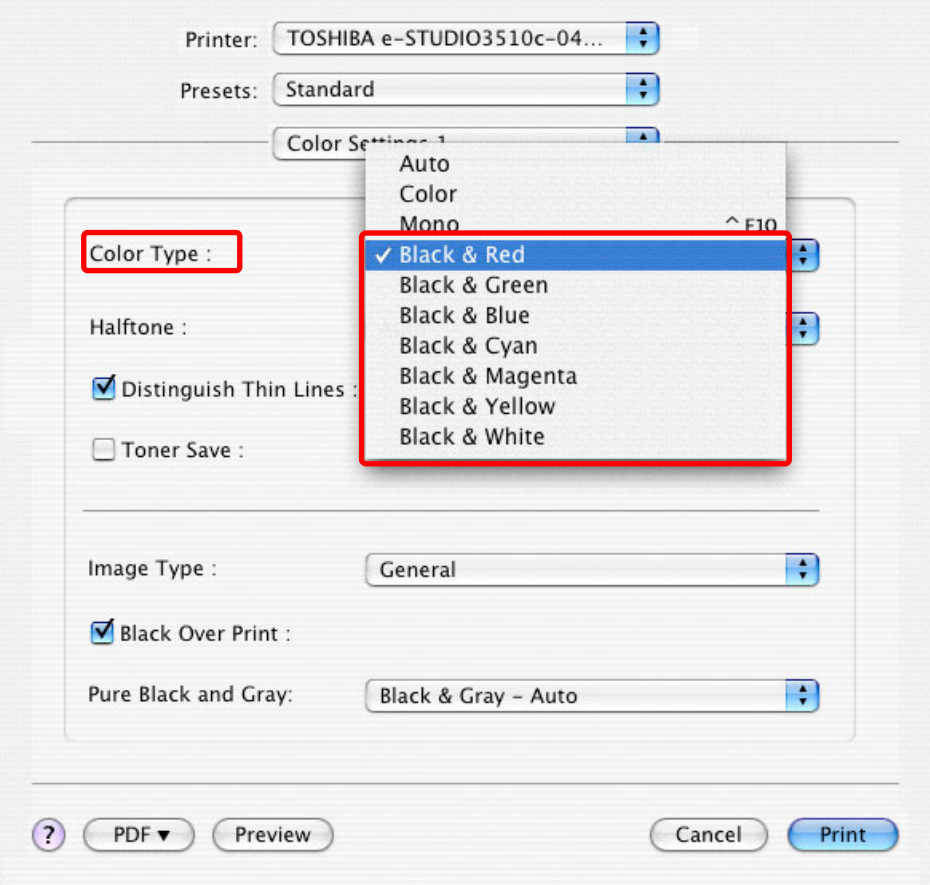
For Macintosh

Mac

Open the print dialog box. Select "Twin color (Black & ***)" from among the "Color Type" options.

*The menu to select varies according to the operating system. Refer to the table below and select the menu.

OS	Menu
8.6 / 9.x	"Color Settings 1" ⇨ "Color Type"
10.2.x	"Printer Features" ⇨ "Feature Sets: Color settings 1" ⇨ "Color Type"
10.3.x / 10.4.x	"Color Settings 1" ⇨ "Color Type"



After selecting these options, print and check the print image quality.
If further image quality adjustments are still necessary, the service technician must use the next procedure according to the image quality problem the user has.

- To obtain a shaper or softer print image: Go to procedure (2).
- To make only the light-colored area darker: Go to procedure (3).

PCL6 PS3 Mac * This adjustment will have an effect only on Auto or Color mode printing.

(2) Enter adjustment mode [05]. To obtain a shaper or softer print image, change the values for codes [8110/8114] to perform fine adjustment, and increase or decrease the sharpness intensity.

• Adjust the value for [05] code corresponding to the print option to be applied (PDL).

*Printing on Macintosh is performed in PostScript. (See the "PS3" row in the table below.)

PDL	Color mode	[05] code	Recommended value	Acceptable value range	Default
PS3	Twin color	05-8110	Set a value larger than 128 to obtain a sharper print image. Set a value smaller than 128 to obtain a softer print image.	0 to 255	128
PCL6	Twin color	05-8114			

* Setting "108" provides an effect corresponding to "-1" for the sharpness option. It is recommended to set approximately "118" corresponding to an intermediate value between "0" (default) and "-1" for the sharpness option, and then perform fine adjustment, while checking the printouts.

<Note>

- This adjustment changes the values set in the MFP. Therefore, it will affect every user who uses the printer by connecting it to the MFP. After the adjustment, the values changed will be applied to all printouts for the "Sharpness" option. Carefully perform the adjustment, being aware that the image quality of all future printouts will be changed, when printing out originals other than the one that is used for the adjustment.

- The code in the Twin-color mode is commonly used in the Standard Auto/Color mode. After the adjustment, the values changed will be also applied to the image quality in the Standard Auto/Color mode. When adjusting the image quality in the Twin-color mode, carefully perform the adjustment, being aware that the image quality of all future printouts will be changed, when performing printing in the Standard Auto/Color mode.

PCL6 PS3 Mac * This adjustment will have an effect only on Auto or Color mode printing.

(3) Enter adjustment mode [05]. To make only the light-colored area darker while leaving the highly colored area as it is, increase the values for codes [8050 to 8065] to adjustment the Low/Medium density of the color..

• Adjust the value for [05] code corresponding to the print option to be applied (PDL and Halftone).

Ex.: • When printing on Windows is performed with the following options selected: PCL6, Color = Twin color, Details = RED, Halftone = Auto

> Text area

Change the values for Y: 05-8062, M: 05-8063 and K: 05-8065.

> Graphic and image area

Change the values for Y: 05-8058, M: 05-8059 and K: 05-8061.

• When printing on Macintosh is performed with the following option selected: Color Type = Black & Green, Halftone = Smooth

> Change the values for Y: 05-8050, C: 05-8052 and K: 05-8053.

*Printing on Macintosh is performed in PostScript. (See the "PS3" row in the table below.)

Color to adjust	PDL	Halftone	[05] code	Subcode	Recommended value	Acceptable value range	Default
Y (Yellow)	PCL5c	Smooth	05-8058	0/1	Set a value larger than 128.	0 to 255	128
		Detail	05-8062	0/1			
	PS3	Smooth	05-8050	0/1			
		Detail	05-8054	0/1			
M (Magenta)	PCL5c	Smooth	05-8059	0/1			
		Detail	05-8063	0/1			
	PS3	Smooth	05-8051	0/1			
		Detail	05-8055	0/1			
C (Cyan)	PCL5c	Smooth	05-8060	0/1			
		Detail	05-8064	0/1			
	PS3	Smooth	05-8052	0/1			
		Detail	05-8056	0/1			
K (Black)	PCL5c	Smooth	05-8061	0/1			
		Detail	05-8065	0/1			
	PS3	Smooth	05-8053	0/1			
		Detail	05-8057	0/1			

*Set the value in increments of approximately 20, while checking the printouts until the optimum value is obtained.

*The color to adjust varies according to the color (color to use for the area other than black) selected in the Twin-color mode. Refer to the table below and select the color to adjust.

Selected color	Color to adjust		
	Y (Yellow)	M (Magenta)	C (Cyan)
Red	✓	✓	
Green	✓		✓
Blue		✓	✓
Cyan			✓
Magenta		✓	
Yellow	✓		

* "Halftone" refers to how halftones are printed. Two options are available: "Smooth" which is intended to improve the reproducibility of gradation and "Detail" which is intended to print halftones in detail (with the high frequency).
The halftone option to be applied in printing can be selected from among the "Halftone" options on the printer driver (Windows) or in the print dialog box (Macintosh).
"Auto" is selected from among the "Apply to" options by default. It is intended to automatically select "Smooth" or "Detail" in accordance with "Apply to" of the halftone option, the selected "Color" and "Image Quality Type" options, as described by the table below.

Apply to	"Color" and "Image Quality Type" options					
	Auto/Color				Black and White	Twin Color
	General	Photograph	Presentation	Line Art		
Text	Detail	Detail	Detail	Detail	Detail	Detail
Graphic (Illustration, line, etc.)	Smooth	Smooth	Smooth	Detail	Detail	Smooth
Image (Photograph, etc.)	Smooth	Smooth	Smooth	Detail	Smooth	Smooth

* The subcode varies according to the area where the density is adjusted. Refer to the table below and set the subcode for the area to be adjusted.

Subcode	Area where the density is adjusted
0	Low-density area
1	Medium-density area
2	High-density area

<Note>

- This adjustment changes the values set in the MFP. Therefore, it will affect every user who uses the printer by connecting it to the MFP. After the adjustment, the values changed will be applied to all printouts for the "Image Quality Type" and "Halftone" options. (For instance, if the value for [05] code for PCL6 and Smooth is changed, it will be applied to printing performed with PCL6 and Halftone = "Smooth" (or "Auto") selected.) Carefully perform the adjustment, being aware that the image quality of all future printouts will be changed, when printing out originals other than the one that is used for the adjustment.

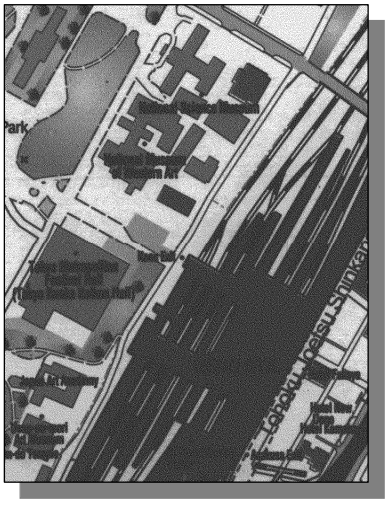
- This code is commonly used in the Twin-color mode and the Color mode. After the adjustment, the values changed will be also applied to the image quality in the Color mode. When adjusting the image quality in the Twin-color mode, carefully perform the adjustment, being aware that the image quality of all future printouts will be changed, when performing printing in the Color mode.

❑ Precautions after the completion of the adjustment

If "White" is selected in the Twin-color mode, all areas other than black will not be printed. Double toner will not be used to print these areas.

4.1 To Clearly Store a B/W Image in the Auto Color Mode

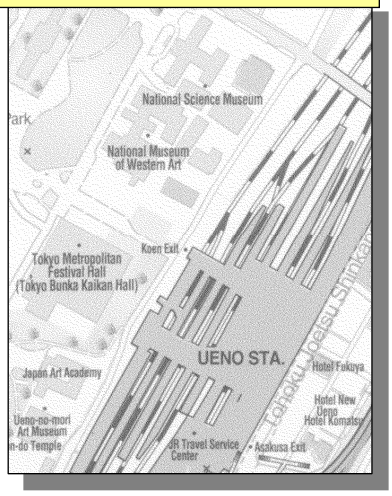
Before the adjustment



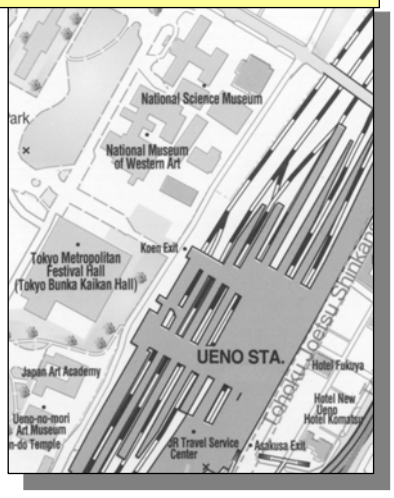
The light image becomes blurred and text becomes illegible.

After the adjustment

After the threshold value was adjusted



Stored in the Gray scale mode



Even the light image is not blurred. Text is clear and legible.

❑ Explanation

When a black-and-white original containing black-and-white photo images is scanned in the Auto color mode and stored in the e-Filing box (Scan to Box), it is stored with binary data, with reference to a threshold value. This may make a dark area blurred and a light area eliminated. Adjust the threshold value, in order to clearly store the black-and-white original in the Auto color mode.

* Please remember that the e-Filing functions are available only on the Windows platform, and not on the Macintosh or UNIX platform.

* This adjustment will have an effect on the image stored using Scan to File and Scan to E-mail.

❑ Procedures

*Both the service technician and the user can perform all adjustments.

Scan to Box * This adjustment will have an effect only on images stored in the Auto color mode.

(1) Adjust the threshold value, in order to store black-and-white originals with the appropriate density.

• Use steps (a) to (d) to adjust the threshold value.

(a) Press the [USER FUNCTIONS] button on the Control Panel to enter the "User Functions" menu.

(b) Press the [USER] button.

(c) Press the [SCAN] button.

(d) In the "THRESHOLD" option, press [◖] or [◗] to adjust the threshold value.

• If the threshold value is set to " ◖ ," the original will be stored with the low density.

• If the threshold value is set to " ◗ ," the original will be stored with the high density.

After adjusting the threshold value, scan and store the original in the e-Filing box. Then check the image quality.

Only if the user's desired image quality is still not obtained after the threshold value has been adjusted, use the next procedure.

Scan to Box * This adjustment will have an effect only on images stored in the Auto color mode.

(2) Select "HIGH QUALITY" from among the "IMAGE QUALITY FOR BLACK" options, to store the black-and-white original in the Gray scale mode.

• Use steps (a) to (d) to select the "IMAGE QUALITY FOR BLACK" option.

(a) Press the [USER FUNCTIONS] button on the Control Panel to enter the "User Functions" menu.

(b) Press the [USER] button.

(c) Press the [SCAN] button.

(d) Press the [HIGH QUALITY] button in the "IMAGE QUALITY FOR BLACK" option.

❑ Precautions after the completion of the adjustment

All scanning functions are implemented with reference to the threshold value and the "IMAGE QUALITY FOR BLACK" option. They will affect the image quality of black-and-white originals stored in the Auto color mode. Therefore, carefully perform the adjustment, being aware that the image quality of all future images will be changed, when storing originals other than the one that is used for the adjustment.

❑ Remarks

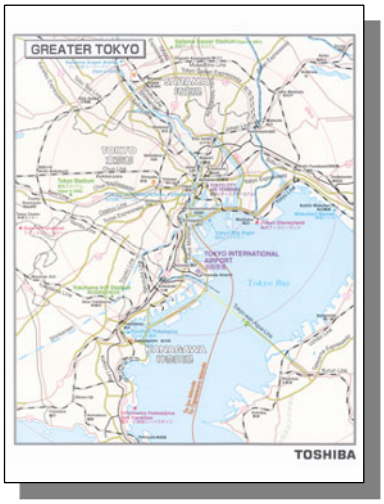
• If "HIGH QUALITY" is selected from among the "IMAGE QUALITY FOR BLACK" options and black-and-white originals are scanned in the Auto color mode and stored in the e-Filing box (Scan to Box), this allows them to be stored in the Gray scale mode rather than in the binary mode, and eventually provides better halftones. The data will increase in size, compared to those in the binary mode.

• The adjustment of threshold values will be effective, only if "STANDARD" is selected from among the "IMAGE QUALITY FOR BLACK" options.

4.2 To Store an Original while Reducing the File Size

Before the adjustment

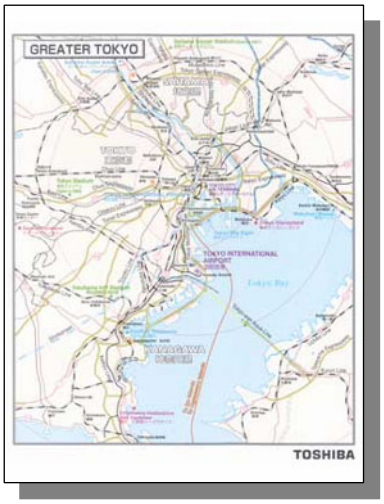
Ex.: A4, 200 dpi, LOW = Approx. 1000 KB



When "LOW" is from among the JPEG compression rate options, the file size will become larger than required.

After the adjustment

Ex.: A4, 200 dpi, HIGH = Approx. 400 KB



When "HIGH" is from among the JPEG compression rate options, the file size will be reduced.

❑ Explanation

When an original is scanned in the Full color or the Gray scale mode and stored in the e-Filing box (Scan to Box), it will be compressed into JPEG format. The data compression rate can be selected on a job-by-job basis. The file size significantly varies depending on the selected data compression rate. (When "LOW" is selected from among the JPEG compression rate options, the file size will be 2 to 3 times larger than the one when "HIGH" is selected.) When storing the original, if a higher priority is given to file size reduction than the image quality, change the JPEG compression rate.

* Please remember that the e-Filing functions are available only on the Windows platform, and not on the Macintosh or UNIX platform.

* This adjustment will have an effect on images stored using Scan to File and Scan to E-mail.

❑ Procedures

* Both the service technician and the user can perform all adjustments.

Scan to Box * This adjustment will have an effect only on images stored in the Full color mode (including the Auto color mode) or the Gray scale mode.

(1) Select "HIGH" from among the JPEG compression rate options.

*"MID" is selected from among the JPEG compression rate options by default.

*The procedure to use varies, depending on whether to select the JPEG compression rate on a job-by-job basis (without utilizing the template), utilize the template, or change the default JPEG compression rate. Refer to "To select the JPEG compression rate on a job-by-job basis" in order to store an image at a high compression rate for a particular job. Refer to "To utilize the template" in order to select an appropriate JPEG compression rate, corresponding to the type of original to store and the purpose of the image stored. Refer to "To change the default JPEG compression rate" in order to have "HIGH" selected from among the JPEG compression rate options by default.

To select the JPEG compression rate on a job-by-job basis (without utilizing the template)

When scanning the original, press the [EDIT] button on the Control Panel. Select "HIGH" from among the JPEG compression rate options.

To utilize the template

Recall the template where "HIGH" is selected from among the JPEG compression rate options and scan the original.

*The user may want to select a compression rate, depending on the type of original or purpose of the image stored. In this case, it is recommended to utilize the template. Initially, select the desired JPEG compression rate in the template and recall it as necessary. This facilitates changing the compression rate on a job-by-job basis. For further information regarding the template and its use, refer to the Operator's Manual for Basic Functions, Network Operator's Guide and Network Administrator's Guide.

To change the default JPEG compression rate

Use steps (a) to (d) to change the default JPEG compression rate.

(a) Press the [USER FUNCTIONS] button on the Control Panel to enter the "User Functions" menu.
(b) Press the [USER] button.
(c) Press the [SCAN] button.
(d) Press the [HIGH] button in the "JPEG COMPRESS" option.

❑ Precautions after the completion of the adjustment

Changing the default JPEG compression rate of the scanning functions will affect the quality of originals, which will be stored in the Full color (including the Auto color) or the Gray scale mode. Carefully perform the adjustment, being aware that the image quality of all future images will be changed, when storing originals other than the one that is used for the adjustment.

❑ Remarks

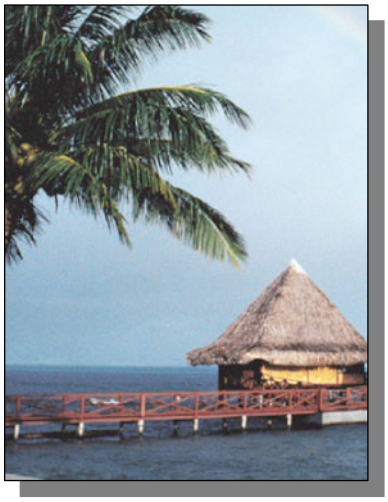
If the full-color or gray-scale image is copied or printed and stored in the e-Filing box (Copy to Box or Print to Box), the user can select a desired JPEG compression rate, when downloading the image using File Downloader on a client PC.

4.3 To Store a Color Photo Image, while Minimizing Moiré

Before the adjustment

When the magazine article containing full-color photo images is stored in the Photo mode, moiré is likely to occur.

After the adjustment



Storing it in the Printed image mode will reduce moiré.

❑ Explanation

When an original, such as a magazine article containing full-color photo images, is copied in the Full color mode, with the Photo mode selected, and stored in the e-Filing box (Copy to Box), moiré is likely to occur on the photo images. It may also occur, when it is copied on paper. But it will be more enhanced, if it is stored as image data. Select the Printed image mode from among the original mode options, in order to store full-color photo images, while minimizing moiré,

* Please remember that the e-Filing functions are available only on the Windows platform, and not on the Macintosh or UNIX platform.

❑ Procedures

* Both the service technician and the user can perform all adjustments.

Copy to Box * This adjustment will have an effect only on the image stored in the Full color mode.

(1) Press the [BASIC] button on the Control Panel. Select "PRINTED IMAGE" from among the original mode options.

*Use either of the following procedures to switch the default original mode to the Printed image mode:

To change default original mode on the Control Panel

Use steps (a) to (d) to change default original mode.

(a) Press the [USER FUNCTIONS] button on the Control Panel to enter the "User Functions" menu.

(b) Press the [USER] button.

(c) Press the [COPY] button.

(d) Press the [PRINTED IMAGE] button in the "ORIGINAL MODE FOR COLOR" option.

To change default original mode in setting mode [08]

Enter setting mode [08]. Set "2" for code [585]. The printed image mode will be selected by default at power-on.

Value for 08-585	Default original mode at power-on
0	Text/Photo (Default)
1	Text
2	Printed image
3	Photo
4	Map
5	Custom

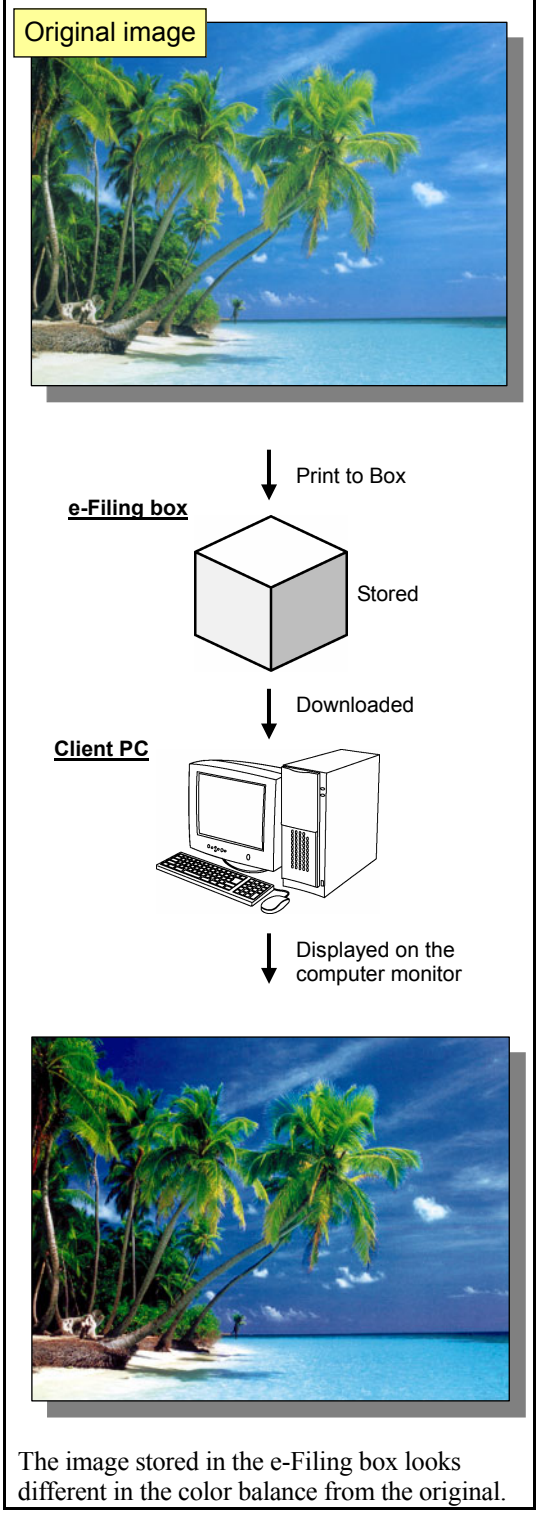
❑ Precautions after the completion of the adjustment

Nothing in particular.

4.4 To Match the Color Balance on the Original

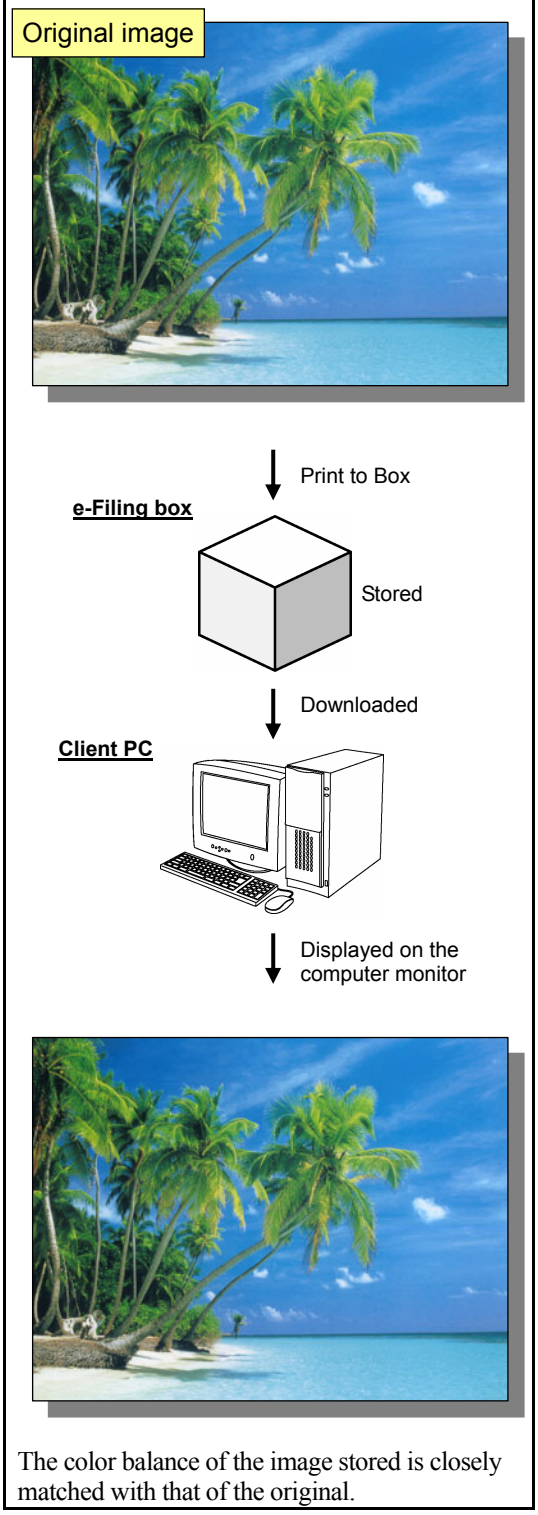
(To adjust the color balance in Print to Box)

Before the adjustment



The image stored in the e-Filing box looks different in the color balance from the original.

After the adjustment



The color balance of the image stored is closely matched with that of the original.

❑ Explanation

If a full-color image is printed on a client PC and stored in the e-Filing box (Print to Box), it will be optimized for printing on paper. This is the reason why the image stored in the e-Filing box looks slightly different in the color balance from the original displayed on the computer monitor. Change the "Image Quality Type" setting on the printer driver, in order to minimize the difference in the color balance and closely match the color balance of the image stored with that of the original.

* Please remember that the e-Filing functions are available only on the Windows platform, and not on the Macintosh or UNIX platform.

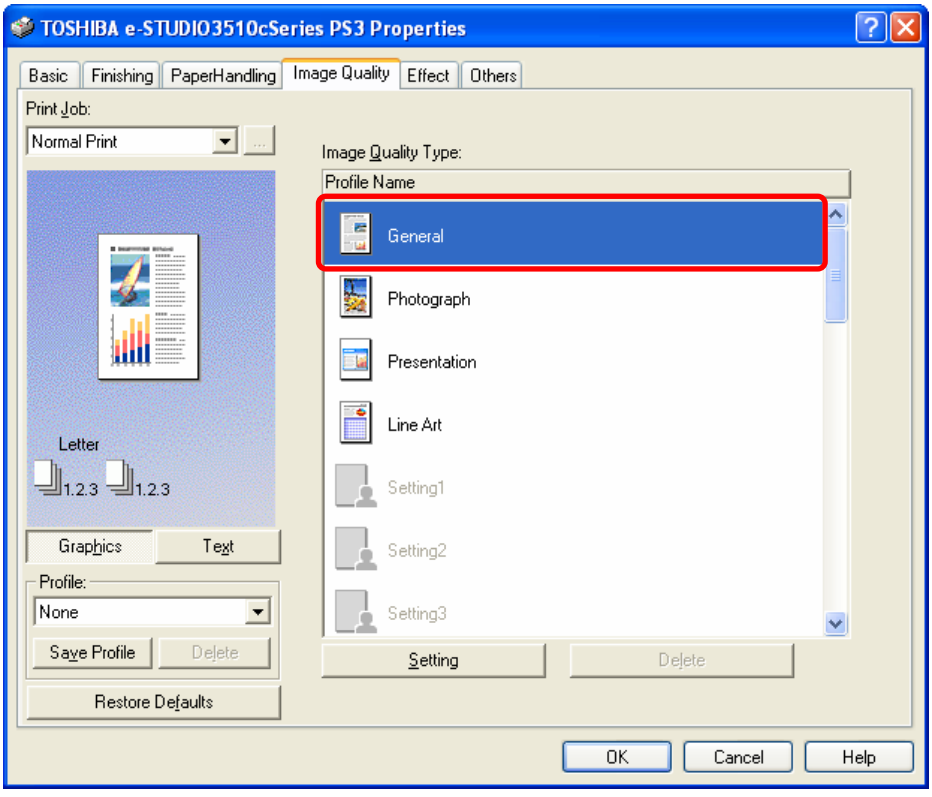
❑ Procedures

* Both the service technician and the user can perform all adjustments.

Print to Box PCL5c PS3 * This adjustment will have an effect only on the image stored in the Auto color mode or the Full color mode.

(1) Open the property page of the printer driver. Select "General" from among the "Image Quality Type" options in the Image Quality tab.

* "General" allows the image to be stored in colors, which are closely matched with the original, compared to the other Image Quality Type options.

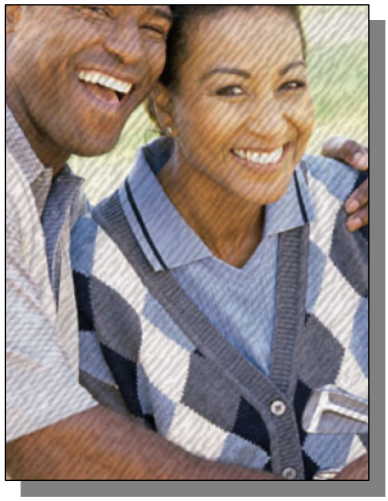


❑ Precautions after the completion of the adjustment

Nothing in particular.

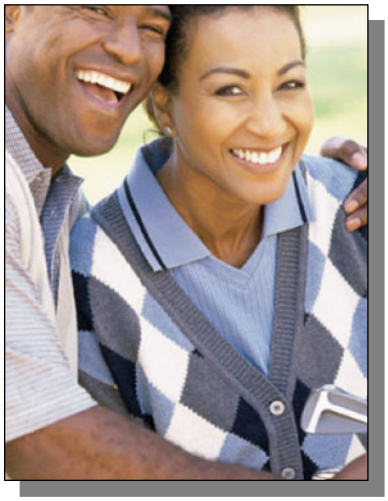
4.5 To Scan and Print, while Minimizing Moiré

Before the adjustment



When the image stored in the e-Filing box is printed, moiré is likely to occur.

After the adjustment



The image stored in the e-Filing box can be printed, while moiré is minimized.

❑ Explanation

An original is scanned and stored in the e-Filing box (Scan to Box). When the image stored is printed directly from the e-Filing box, moiré may occur, depending on the type of original. Also, it is likely to occur, particularly when the original is scanned in the Full color mode or the Auto color mode in a high resolution (600 dpi) or even in the Gray scale mode. Select an appropriate scan resolution or adjust the sharpness intensity in the scanning functions, in order to store the original and print it from the e-Filing box, while minimizing moiré.

❑ Procedures

* You can start with any of the procedures. But it is recommended to perform the procedures in order, as listed below. You can use one procedure in conjunction with another. But if this changes the image quality more than required or loses the effectiveness of the adjustment, restore the settings made in the previously used procedure to the original ones. Then use other procedures.
* Both the service technician and the user can use procedures (1) to (3).
* Only the service technician must use procedure (4).

Scan to Box

(1) When scanning the original, press the [EDIT] button on the Control Panel. Select "PRINTED IMAGE" from among the original mode options.

* This adjustment will be effective, only if "TEXT" or "PHOTO" is initially selected from among the original mode options.

* This adjustment will have an effect only on the image stored in the Full color mode.

After changing the original mode, scan and store the original. Then print and check the print image quality. If further image quality adjustments are still necessary, use other procedures.

Scan to Box

(2) When scanning the original, press the [EDIT] button on the Control Panel. Select a lower resolution in the resolution option.

* "200 (dpi)" is selected from among the resolution options by default. If moiré occurs in a resolution of 200 dpi, select a lower resolution (150 dpi is recommended.).

* This adjustment will have an effect only on an image stored in the Full color mode or the Gray scale mode.

After changing the resolution, scan and store the original. Then print and check the print image quality.
If you do not prefer to decrease a resolution, or if moiré still occurs even in a lower resolution, use other procedures.

Scan to Box

(3) When scanning, press the [EDIT] button on the Control Panel. Adjust the sharpness intensity.

• Press the [+] button on the indicator to increase the sharpness intensity or the [-] button to decrease it.

* The sharpness intensity is set to the center (±) by default. If moiré occurs by default, press the [-] button to decrease the sharpness intensity.

After adjusting the sharpness intensity, scan and store the original. Then print and check the print image quality.
With the sharpness intensity set to the minimum, if moiré still occurs, use other procedures.

Scan to Box

(4) Enter adjustment mode [05]. Change the values for codes [1086 to 1088] and [843] to adjust the sharpness intensity in the scanning functions.

* This adjustment will have an effect only on an image stored in the Full color mode or the Gray scale mode.

Color mode	Original mode	[05] code	Recommended value	Acceptable value range	Default
Full color	Text	05-1086	Set a value smaller than 128.	0 to 255	128
	Printed image	05-1087			
	Photo	05-1088			
Gray scale	---	05-843			

* Setting "0" provides the softest image, while setting "255" provides the sharpest image.

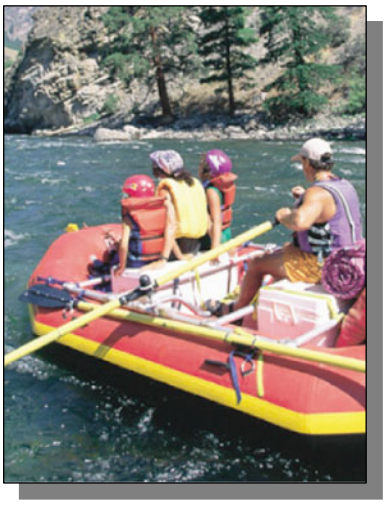
❑ Precautions after the completion of the adjustment

When the original containing text and lines is scanned and printed, the adjustment may possibly cause the blurred text and lines or a blend of undesired colors. Therefore, carefully perform the adjustment, while checking the scanned-in image or printout.

4.6 To Finely Print the Image Stored in the e-Filing box

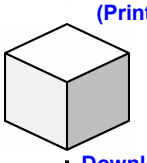
(To print images stored through Copy to Box or Print to Box)

Before the adjustment



Copy to Box,
Print to Box
(Print data)

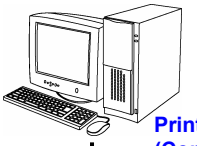
e-Filing box



Stored

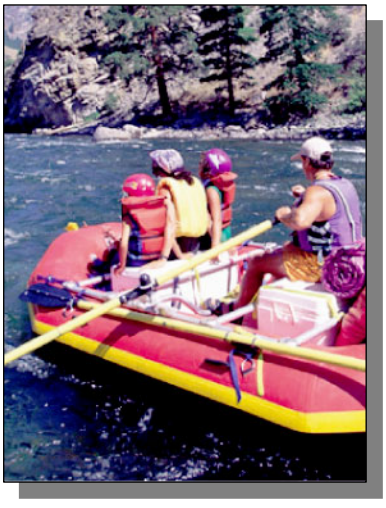
Downloaded
(Converted into RGB)

Client PC



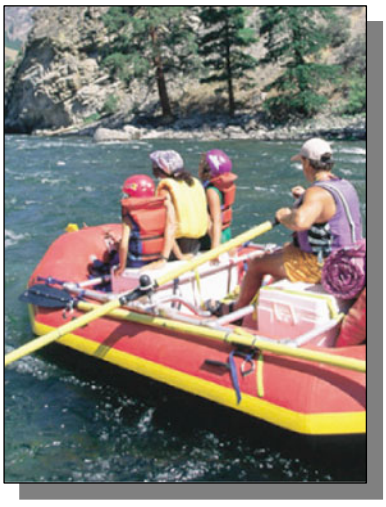
Stored

Print
(Converted into
print data again)



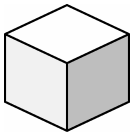
If the image stored in the e-Filing box is downloaded to a PC and then printed out, the image data conversion may diminish the image quality.

After the adjustment



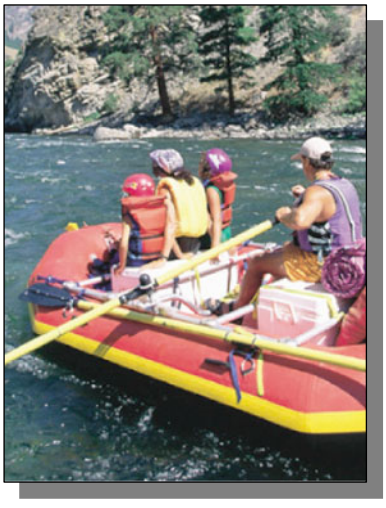
Copy to Box,
Print to Box
(Print data)

e-Filing box



Stored

Print
(Print data)



If the image is printed out directly from the e-Filing box, the image quality will be maintained.

❑ Explanation

Initially, the original is copied or printed and stored in the e-Filing box (Copy to Box or Print to Box) as CMYK data or optimized for printing on paper. While it is being downloaded to a client PC using File Downloader or the TWAIN driver, it is converted into RGB data or optimized for displaying on the computer monitor. RGB data are not suitable for printing on paper. Therefore, if printed out, the image quality may be diminished. Therefore, it should be printed out directly from the e-Filing box, rather than downloaded to the PC, in order to obtain a fine printout.

* Please remember that the e-Filing functions are available only on the Windows platform, and not on the Macintosh or UNIX platform.

❑ Procedures

* Both the service technician and the user can perform all adjustments.

Copy to Box Print to Box

(1) Print out the image stored in the e-Filing box on the Control Panel or using the e-Filing Web utility.

* For further information regarding how to print it out, refer to the following documents:
  - To print it out on the Control Panel: Operator's Manual for Basic Functions
  - To print it out using the e-Filing Web utility: e-Filing Guide

<Note> Scan to Box Fax to Box

If the image is scanned or faxed and stored in the e-Filing box (Scan to Box or Fax to Box), download it to the client PC once, select the desired Image Quality Type option on the printer driver, and print it out, rather than printing it out directly from the e-Filing box. Then, the image may be finely printed.
For further information regarding how to print full-color images scanned and stored, refer to 4.9 To Finely Print Color Images Scanned and Stored.

❑ Precautions after the completion of the adjustment

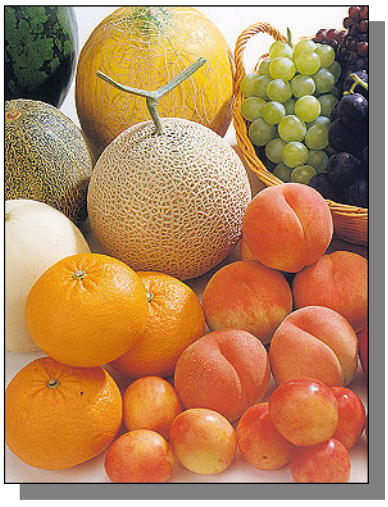
Nothing in particular.

❑ Remarks

When "Archive Document" of the e-Filing Web utility or "Backup" of the e-Filing Backup/Restore Utility is used, image data stored in the e-Filing box can be converted to a file maintaining the image quality optimized for printing. For example, you may want to temporarily move stored data to make some space in the box and save them again in the box. When data are converted to a PDF or TIFF file and then moved using the File Downloader, the image quality may be diminished. However, you can use Archive Document or Backup to move the data while maintaining the image quality. The Backup feature can also collectively backs up all the data in the e-Filing box. Note that files created through the Archive Document or Backup feature cannot be directly opened on the PC or printed out. For further information regarding Archive Document and Backup, refer to the e-Filing Guide.

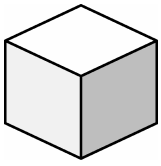
4.7 To Store an Image Suitable for Displaying on the Monitor or Image Editing

Before the adjustment



Copy to Box
(Print data)

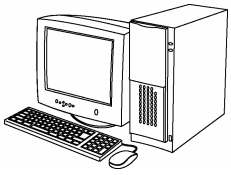
e-Filing box



Stored

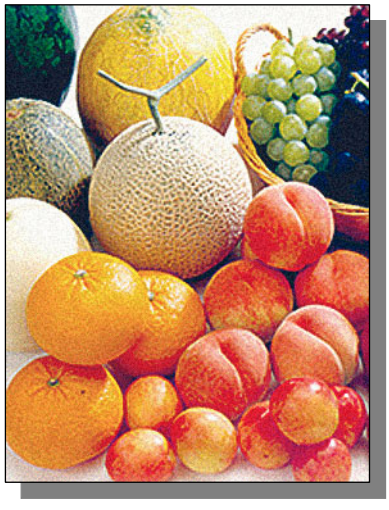
Downloaded
(Converted into RGB)

Client PC



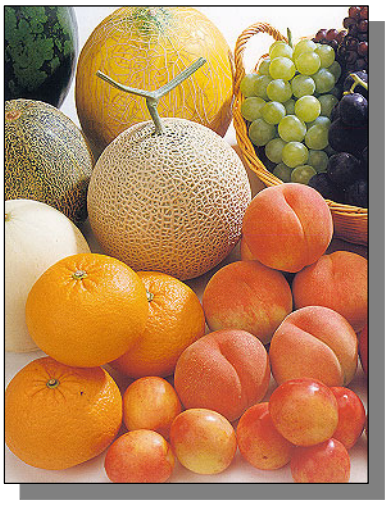
Stored and edited

Displayed on the computer monitor
(RGB data)



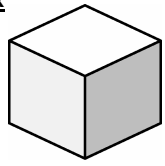
When the original is stored by Copy to Box, it will be converted into RGB data, while being downloaded to a PC. This may diminish the image quality.

After the adjustment



Scan to Box
(RGB data)

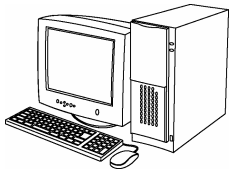
e-Filing box



Stored

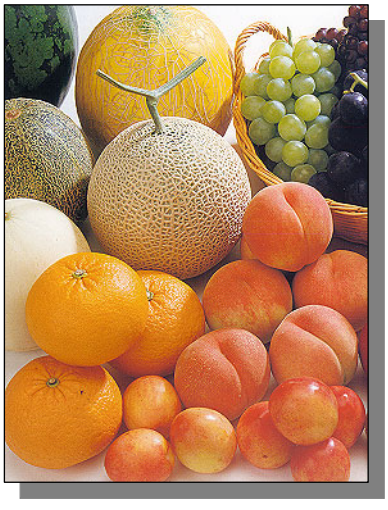
Downloaded
(RGB data)

Client PC



Stored and edited

Displayed on the computer monitor
(RGB data)



The original is stored as RGB data by Scan to Box. This can avoid unnecessary data conversion. As a result, the image quality can be maintained.

❑ Explanation

Initially, a full-color original is copied and stored in the e-Filing box (Copy to Box) as CMYK data or optimized for printing on paper. But while it is being downloaded to a client PC using the File Downloader or the TWAIN driver, it is converted into RGB data or optimized for displaying on the computer monitor. Depending on the type of original, this CMYK-to-RGB conversion may cause out-of-registration colors or graininess on the printout. If the image is displayed on the monitor and further edited on the PC, the image quality may be diminished.

To store a full-color original and display it on the computer monitor, while minimizing image degradation, scan and store it in the e-Filing box (Scan to Box). This allows it to be stored as RGB data.

* Please remember that the e-Filing functions are available only on the Windows platform, and not on the Macintosh or UNIX platform.

❑ Procedures

* Both the service technician and the user can perform all adjustments.

Scan to Box * This adjustment will have an effect only on the image stored in the Full color mode.

(1) Scan the full-color image and store it in the e-Filing box.

* For further information regarding how to scan and store images, refer to the Operator's Manual for Basic Functions.

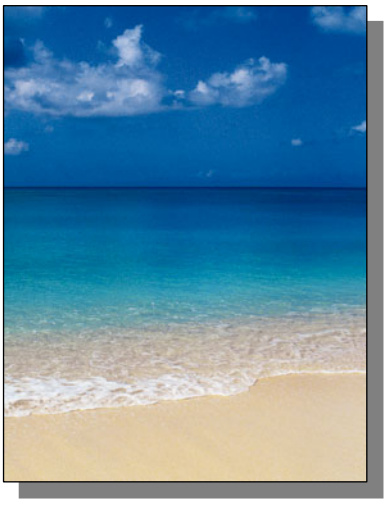
❑ Precautions after the completion of the adjustment

Nothing in particular.

4.8 To Finely Print Color Images Scanned and Stored

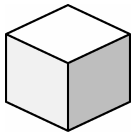
(To print images stored through Scan to Box)

Before the adjustment



Scan to Box
(RGB data)

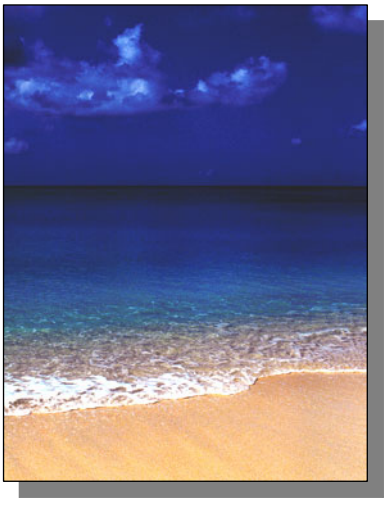
e-Filing box



Stored

Ex: Printing image mode = Presentation

Print
(Converted into
print data)

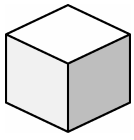


Unless the printing image mode is selected, printing may be performed with image processing not suitable for the stored data.

After the adjustment

Scan to Box
(RGB data)

e-Filing box



Stored

Ex: Printing image mode = Photo

Print
(Converted into
print data)

When the printing image mode suitable for the stored data is selected, the data can be printed finely with optimal image processing.

❑ Explanation

When an image is scanned stored in the e-Filing box (Scan to Box) in the Full color or the Auto color mode, and printed as it is (without the printing image mode set), printing may be performed with image processing not suitable for the image, and the user may not obtain the desired image quality. To finely print a full-color image scanned and stored, select the printing image mode (General/Photo/Presentation/Line Art) suitable for the image. Then, printing can be performed with image processing optimal for the image, in the same manner as printing on the printer driver.

❑ Procedures

*Perform the adjustment in accordance with the procedures below.

*Both the service technician and the user can perform all adjustments.

Scan to Box * This adjustment will have an effect only on the image stored in the Full color mode.

(1) Scan the full-color image and store it in the e-Filing box.

*For further information regarding how to scan and store images, refer to the Operator's Manual for Basic Functions.

Scan to Box

(2) Select a printing image mode suitable for the stored image.

• Use steps (a) to (d) to change the printing image mode.

(a) Press the [USER FUNCTIONS] button on the Control Panel to enter the "User Functions" menu.

(b) Press the [USER] button.

(c) Press the [E-FILING] button.

(d) Press the button for the mode suitable for the image in the [PRINTING IMAGE MODE] option.

*For further information regarding the features of each printing image mode, refer to the explanation of the "Image Quality Type" options in Procedure (1) of 3.2 To Obtain the Desired Color Balance.

<Note> A change to the printing image quality mode will apply to all future printouts using the e-Filing box. Carefully perform the adjustment while printing out images other than the one that is used for the adjustment.

Scan to Box

(3) Print out the image stored in the e-Filing box on the Control Panel or using the e-Filing Web utility.

*For further information regarding how to print it out, refer to the following documents:

• To print it out on the Control Panel: Operator's Manual for Basic Functions

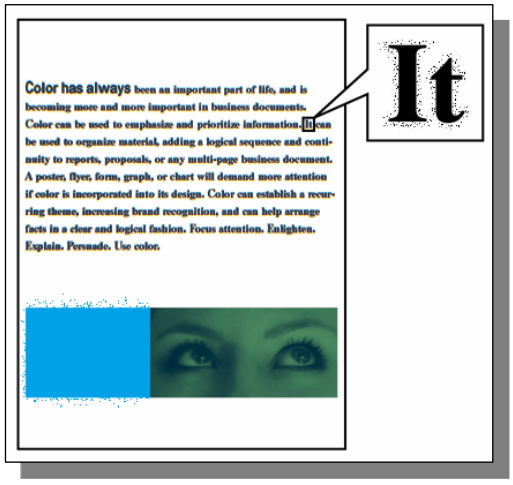
• To print it out using the e-Filing Web utility: e-Filing Guide

❑ Precautions after the completion of the adjustment

Nothing in particular.

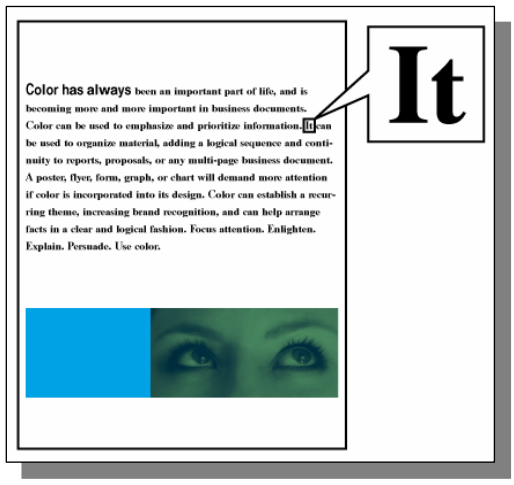
5.1 To Clearly Scan Text (To reduce noise around text)

Before the adjustment


Color has always been an important part of life, and is becoming more and more important in business documents. Color can be used to emphasize and prioritize information. It can be used to organize material, adding a logical sequence and continuity to reports, proposals, or any multi-page business document. A poster, flyer, form, graph, or chart will demand more attention if color is incorporated into its design. Color can establish a recurring theme, increasing brand recognition, and can help arrange facts in a clear and logical fashion. Focus attention. Enlighten. Explain. Persuade. Use color.
It

If the original is scanned in the Full color mode or the Gray scale mode, noise may occur in text or edges of a solid filled area.

After the adjustment


Color has always been an important part of life, and is becoming more and more important in business documents. Color can be used to emphasize and prioritize information. It can be used to organize material, adding a logical sequence and continuity to reports, proposals, or any multi-page business document. A poster, flyer, form, graph, or chart will demand more attention if color is incorporated into its design. Color can establish a recurring theme, increasing brand recognition, and can help arrange facts in a clear and logical fashion. Focus attention. Enlighten. Explain. Persuade. Use color.
It

The image quality is maintained, while noise is being reduced.

❑ Explanation

When an original is scanned in the Full color or the Gray scale mode, the data compression may cause noise (toner scattering) around text or the edges of a solid filled area. Adjust the JPEG compression rate or change the scan resolution, in order to obtain a better scanned-in image, while reducing noise.

* This adjustment will have an effect on the image scanned in the Full color mode (including the Auto color mode) or the Gray scale mode.

❑ Procedures

* You can start with any of the procedures. But it is recommended to perform the procedures in order, as listed below. You can use one procedure in conjunction with another. But if this changes the image quality more than required or loses the effectiveness of the adjustment, restore the settings made in the previously used procedure to the original ones. Then use other procedures.
* Both the service technician and the user can use all procedures.

(1) When scanning the original, press the [EDIT] button on the Control Panel. Select "LOW" from among the JPEG compression rate options.

* [MID] is selected from among the JPEG compression rate options by default.

After changing the compression rate, scan the original and check the scanned-in image quality.
If further image quality adjustments are still necessary, use procedure (2).

(2) When scanning the original, press the [EDIT] button on the Control Panel. Select a higher resolution in the resolution option.

* "200 (dpi)" is selected from among the resolution options by default. If noise occurs in a resolution of 200 dpi, select a higher resolution (300 dpi, 400 dpi or 600 dpi).

After changing the resolution, scan the original and check the scanned-in image quality.
If further image quality adjustments are still necessary, use procedure (1).

❑ Precautions after the completion of the adjustment

• The adjustment of the JPEG compression rate or resolution may possibly increase the size of the file to be stored. Therefore, carefully perform the adjustment, while checking the scanned-in image quality. The table below shows you the correlation between a resolution and file size. (The ratio of the file size may vary depending on the type of original. Therefore, use the table below just for your reference.)

* The file size in a resolution of 200 dpi is 1.

Resolution	File size ratio
200 dpi	1
300 dpi	Approx. × 2
400 dpi	Approx. × 3
600 dpi	Approx. × 8

• If the resolution selected in procedure (2) is too high, moiré may possibly occur in the scanned-in image. Therefore, carefully adjust the resolution, while checking the scanned-in image.

❑ Remarks

Use the following steps to change the default JPEG compression rate and resolution options:

(a) Press the [USER FUNCTIONS] button on the Control Panel to enter the "User Functions" menu.
(b) Press the [USER] button.
(c) Press the [SCAN] button.
(d) In the "JPEG COMPRESS" or "RESOLUTION" option, press the button corresponding to the desired compression rate or resolution option.

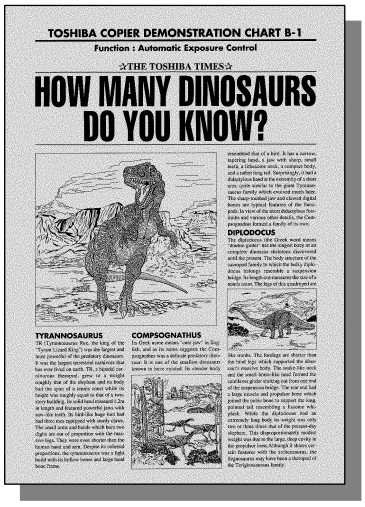
* The default resolution can be selected on a color mode basis: Full color mode (including the Auto color mode), Gray scale mode and Black mode. But, remember that some of the resolution options cannot be selected as the default. (The resolution options available vary depending on whether the optional GC-1260 expansion memory is installed or not.)

• The following resolution options are available as the default:
  • Full color mode (including the Auto color mode): 400 / 300 / 200 / 150 / 100 (dpi)
  • Gray scale mode: 400 / 300 / 200 / 150 / 100 (dpi)
  • Black mode: 600 / 400 / 300 / 200 / 150 (dpi)

5.2 To Scan an Original, while Eliminating the Background Color

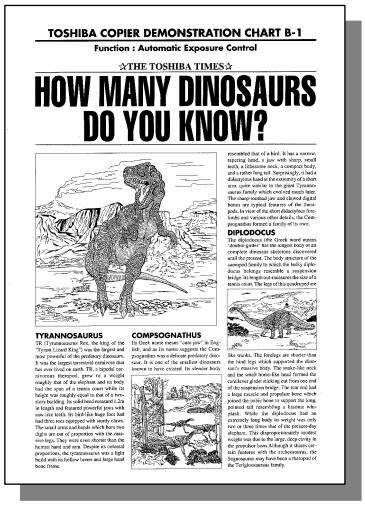
(To eliminate the background density)

Before the adjustment



The background color of the original is also scanned. Therefore, no clear contrast is made between the background and image.

After the adjustment



The background color is eliminated, allowing clear contrast between the background and image.

❑ Explanation

When an original with a background is scanned, such as a newspaper and colored paper, the background color is also scanned. Therefore, no clear contrast is made between the background and image. Perform background adjustment, in order to clearly scan such originals.

* This adjustment will have an effect on the image scanned in all color modes. However, the adjustment (procedure (2)) in adjustment mode [5] cannot be performed in the Gray scale mode and the Black mode.

❑ Procedures

* You can start with any of the procedures. But it is recommended to perform the procedures in order, as listed below. You can use one procedure in conjunction with another. But if this changes the image quality more than required or loses the effectiveness of the adjustment, restore the settings made in the previously used procedure to the original ones. Then use other procedures.
* Both the service technician and the user can use procedure (1).
* Only the service technician must use procedure (2).

(1) When scanning the original, press the [EDIT] button on the Control Panel. Press the [BACKGROUND ADJUSTMENT] button. Press the [◁] button to decrease the background density.

After decreasing the background density, scan the original and check the scanned-in image quality.
With the background density set to the minimum, if further image quality adjustments are still necessary, the service technician must use the next procedure.

(2) Enter adjustment mode [05]. Change the values for codes [1070 to 1072] to decrease the background density.

• The code to use varies according to color mode and original mode. Adjust the value for [05] code corresponding to the color mode for which you would like to improve the image quality.

Color mode	Original mode	[05] code	Recommended value	Acceptable value range	Default
Full color	Text	05-1070	Set a value smaller than 50.	0 to 50	50
	Printed image	05-1071			
	Photo	05-1072			

* Set the value in increments of approximately 10, while checking the scanned-in image until the optimum value is obtained.

* The background density in the Full color mode (code 05-1070, 1071 or 1072) will become the lowest, if "0" is set. On the other hand, it will become the highest, if "50" is set. Changing the value will also change the background density in the Full color mode, when the "Background Adjustment" indicator is set to the center. Then, if the background density of the center value is changed, each step of the indicator will be changed accordingly. (For instance, if the center value is decreased by 5 (lighter), the value of each step of the indicator will also be decreased by 5 (lighter)).

❑ Precautions after the completion of the adjustment

The adjustment may possibly diminish the quality of the light-colored image. Therefore, carefully perform the adjustment, while checking the scanned-in image.

❑ Remarks

When scanning the original, use the following steps to change the default indicator position in the background adjustment option, which is displayed on the Control Panel:

(a) Press the [USER FUNCTIONS] button on the Control Panel to enter the "User Functions" menu.

(b) Press the [USER] button.

(c) Press the [SCAN] button.

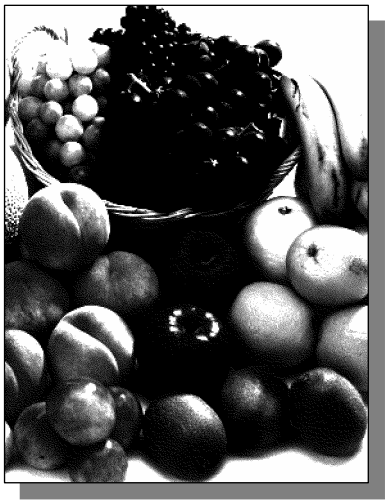
(d) Press the [Next] button twice to display the screen to change the default values in the Full color mode and the Auto color mode.

(e) Select the default background density in the "BACKGROUND ADJUSTMENT" option.

5.3 To Clearly Scan and Print an Original in Black and White

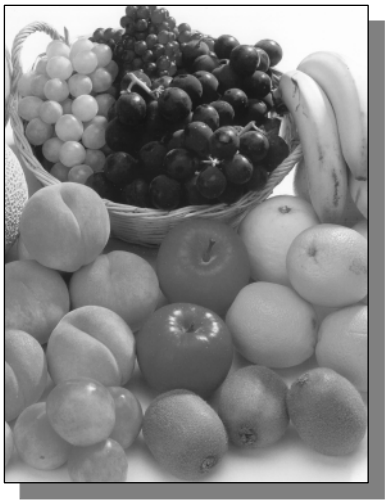
(To improve gradation and reduce graininess)

Before the adjustment



If the original is scanned in the Black mode, the halftones may become blurred in black.

After the adjustment



The halftones of the scanned-in image are clearly printed out.

❑ Explanation

If an original is scanned in the Black mode, a difference in the density level of the halftones cannot be accurately scanned. As a result, it may become blurred in black or grained. Scan a black-and-white original in the Gray scale mode, in order to scan and print it out in black and white more clearly.

❑ Procedures

*Both the service technician and the user can perform all adjustments.

(1) When scanning the original, press the [EDIT] button on the Control Panel. Select "IMAGE SMOOTHING" from among the color mode options.

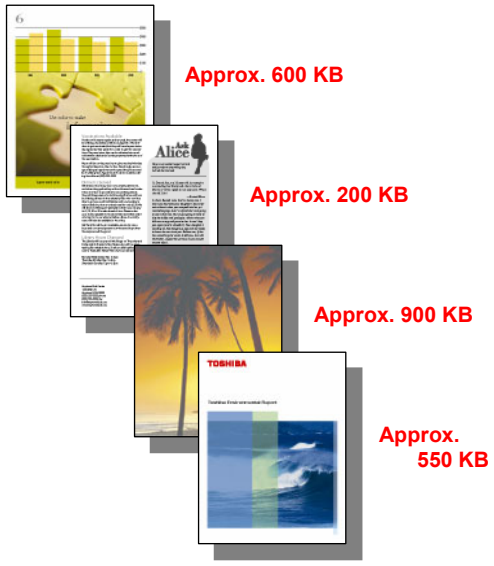
❑ Precautions after the completion of the adjustment

The adjustment may possibly increase the size of the file to be stored. Therefore, carefully perform the adjustment, while checking the scanned-in image quality. The correlation between color mode and file size is as described below. (The ratio of the file size may vary depending on the type of original. Therefore, use the description below just for your reference.)

* Ratio of the file size in the Black mode to the Gray scale mode
  - If the file size in the Black mode with the Text mode selected is 1, it will be increased to approximately 7 times in the Gray scale mode.
  - If the file size in the Black mode with the Photo mode selected is 1, it will be approximately doubled in the Gray scale mode.

5.4 To Scan the Original, while Reducing the File Size

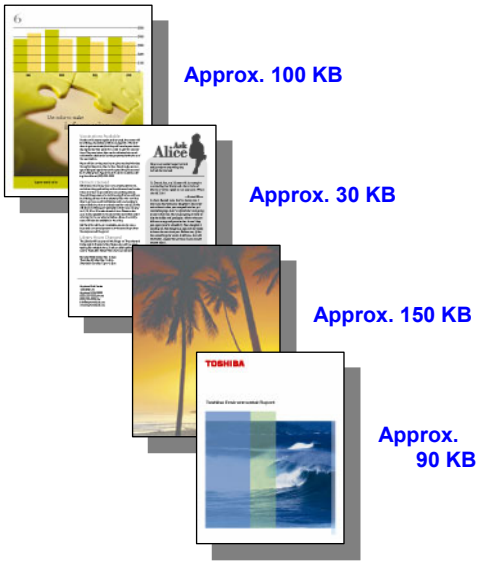
Before the adjustment



* The above file sizes are just for your reference.

If the original is constantly scanned at the default compression rate, the file size may become larger than required.

After the adjustment



* The above file sizes are just for your reference.

If the original is scanned at a reasonable compression rate, depending on the purpose of the scanned-in image, the file size will be successfully reduced.

❑ Explanation

If an original is scanned in the default resolution and at the default compression rate, a proper image will be obtained for general purposes. But the file size may become larger than required. The file size of the scanned-in image significantly varies, depending on the selected resolution or JPEG compression rate. If an appropriate resolution and a compression rate are selected in accordance with the purpose of the original, the image quality will be maintained, while the file size is being reduced. Change the resolution, original mode, or JPEG compression rate or perform the background adjustment, in order to minimize the file size of the scanned-in image.

The e-STUDIO2500c/3500c/3510c offers the "Slim PDF" function. This will diminish the image quality but reduce the file size to approximately 1/8 to 1/10, compared to the scanned-in image (300dpi, compression rate: MID) in JPEG format.

❑ Procedures

* The procedure to use varies, depending on whether to reduce the file size by changing the options when scanning the original or in Slim PDF. Refer to "To Reduce the File Size by Changing the Options when Scanning the Original" in order to reduce the file size without changing the file format. Refer to "To Reduce the File Size in Slim PDF" in order to give a higher priority to the file size reduction than the image quality.

5.4.1 To Reduce the File Size by Changing the Options when Scanning the Original

* You can start with any of the procedures. But it is recommended to perform the procedures in order, as listed below. You can use one procedure in conjunction with another. But if this changes the image quality more than required or loses the effectiveness of the adjustment, restore the settings made in the previously used procedure to the original ones. Then use other procedures.
* Both the service technician and the user can use all procedures.

(1) When scanning the original, press the [EDIT] button on the Control Panel. Select a lower resolution in the resolution option.

* "200 (dpi)" is selected from among the resolution options by default. Select a lower resolution option (100 dpi or 150 dpi) to reduce the file size.

* This adjustment will have an effect on an image scanned in all color modes (Full color, Gray scale, Black and Auto color).

After changing the resolution, scan the original and check the scanned-in image quality.
If further image quality adjustments are still necessary, use other procedures.

(2) When scanning the original, press the [EDIT] button on the Control Panel. Select "TEXT" from among the original mode options.

* Perform this adjustment, only if a black-and-white original containing no photo images is scanned or if degradation in the photo image quality is acceptable.

* This adjustment will be effective, only if [TEXT/PHOTO] or [PHOTO] is initially selected from among the original mode options.

* This adjustment will have an effect only on an image scanned in the Black mode.

After changing original mode, scan the original and check the scanned-in image quality.
If further image quality adjustments are still necessary, use other procedures.

(3) When scanning the original, press the [EDIT] button on the Control Panel. Select "HIGH" from among the JPEG compression rate options.

* [MID] is selected from among the JPEG compression rate options by default.

* This adjustment will have an effect only on an image scanned in the Full color mode (including the Auto color mode) or the Gray scale mode.

After changing the compression rate, scan the original and check the scanned-in image quality.
If further image quality adjustments are still necessary, use other procedures.

(4) When scanning the original, press the [EDIT] button on the Control Panel. Press the [BACKGROUND ADJUSTMENT] button. Press the [◁] button to decrease the background density. Then select "HIGH" from among the JPEG compression rate options.

* This adjustment will be effective, only if the original with a color background, such as a newspaper and color paper, is scanned.

* This adjustment will have an effect only on the image scanned in the Full color mode (including the Auto color mode) or the Gray scale mode.

After decreasing the background density and changing the compression rate, scan the original and check the scanned-in image quality.
With the background density set to the minimum, if further image quality adjustments are still necessary, use other procedures.

❑ Precautions after the completion of the adjustment

• The table below shows you the correlation between the adjustment and file size. (The ratio of the file size may vary, depending on the type of original. Therefore, use the table below just for your reference.)

• Correlation between the resolution and the file size (procedure (1))

* The file size in a resolution of 200 dpi is 100%.

Resolution	File size ratio
200 dpi	100%
150 dpi	Approx. 60%
100 dpi	Approx. 30%

• Correlation between the original mode and the file size (procedure (2))

* The file size in the Photo mode is 100%.

Original mode	File size ratio
Photo	100%
Text	Approx. 20%

• Correlation between the JPEG compression rate and the file size (procedure (3))

* The file size is 100%, with [MID] selected.

JPEG compression rate	File size ratio
MID	100%
HIGH	Approx. 80%

• The adjustment may possibly diminish the image quality, as shown by the table below. Therefore, carefully perform the adjustment, while checking the scanned-in image.

Procedures used	Possible image degradation
Any of procedures from (1) to (4)	The photo image area may be blurred.
(1) or (3)	Noise may be increase around text.
(1) or (3)	Small-sized text may become illegible.
(4)	Light-colored images may not be clearly scanned.

❑ Remarks

• Use the following steps to change the default resolution, original mode, JPEG compression rate and/or background adjustment options:

(a) Press the [USER FUNCTIONS] button on the Control Panel to enter the "User Functions" menu.

(b) Press the [USER] button.

(c) Press the [SCAN] button.

(d) Press the [Next] button several times to display the screen to change the default value in the desired Color mode.

(e) In the "RESOLUTION," "ORIGINAL MODE," "JPEG COMPRESS" and/or "BACKGROUND ADJUSTMENT" option, press the desired button to change the default.

* The default resolution can be selected on a color mode basis: Full color mode (including the Auto color mode), Gray scale mode and Black mode. But remember that some of the resolution options cannot be selected as the default. (The resolution options available vary, depending on whether the optional GC-1260 expansion memory is installed or not.)

• The following resolution options are available as the default:

• Full color mode (including Auto color mode):	400 / 300 / 200 / 150 / 100 (dpi)
• Gray scale mode:	400 / 300 / 200 / 150 / 100 (dpi)
• Black mode:	600 / 400 / 300 / 200 / 150 (dpi)

• Remember that when scanning the original in the Full color mode, if the original mode option is switched from the Photo mode or the Printed image to the Text mode, the file size may become larger.

5.4.2 To Reduce the File Size in Slim PDF

* Both the service technician and the user can use procedure (1).
* The service technician must use only procedure (2) in adjustment mode [05] (step (b) "To reduce the blurred area of text and photos"). Both the service technician and the user can use other procedures.

<Note>

- Slim PDF will be available only if "SCAN TO FILE OR USB" or "SCAN TO E-MAIL" is selected in scan mode to scan the original in the Full color mode or the Gray scale mode.
- The image quality or file size in Slim PDF may be more affected than in JPEG or PDF, depending on the environment (original placing direction) when the original is scanned. In addition, the scanning will be slowed down.
- Slim PDF is not suitable for the following originals. It is recommended to scan them in JPEG or PDF.
  - Originals blurred when scanned in JPEG or PDF
    (If the original is scanned in Slim PDF, the image quality may be further diminished)
  - Complicated originals such as tables or maps containing lines or small-sized text
  - Originals where stable image quality is required, such as critical documents

(1) When scanning the original, press the [EDIT] button and the [SLIM PDF] button on the Control Panel.

After adjusting the original in Slim PDF, scan the original and check the scanned-in image quality.
If the image quality adjustment in Slim PDF is necessary, use the next procedure.

(2) Adjust the image quality in Slim PDF at a user's request.

To reduce the blurred area of text and photos

Use steps (a) to (b) to perform the adjustment.

(a) Turn the original and place it. Or when scanning the original, press the [EDIT] button on the Control Panel. Change the "Image Rotation" option to turn the original.

After changing the "Image Rotation" option, scan the original and check the scanned-in image quality.
If further image quality adjustments are still necessary, the service technician must use the next procedure.

(b) Enter adjustment mode [05]. Change the values for code [9104] and [9107] to adjust the image quality and resolution of a background.

[05] code	Recommended value	Acceptable value range	Default
05-9104	5	0 to 10	5
05-9107	1 or 2	0 to 4	1

* Changing the value provides the effects below. Enter the value within the recommended value range. Otherwise, it may cause a loss in MFP performance, including degradation in the image quality.

Set a smaller value: High compression (small file size), low image quality, and high scanning speed

Set a later value: Low compression (large file size), high image quality, and low scanning speed

To leave the color of text as it is

Use steps (a) to (b) to perform the adjustment.

(a) Turn the original and place it. Or when scanning the original, press the [EDIT] button on the Control Panel. Change the "Image Rotation" option to turn the original.

After changing the "Image Rotation" option, scan the original and check the scanned-in image quality.

If further image quality adjustments are still necessary, use the next procedure.

(b) When scanning the original, press the [EDIT] button on the Control Panel. Press the [-] button to decrease the sharpness intensity.

* Decrease the sharpness intensity by 1 step from the current value.

To eliminate the background density

Use steps (a) to (b) to perform the adjustment.

(a) When scanning the original, press the [EDIT] button on the Control Panel. Press the [◁] button to decrease the background density.

After decreasing the background density, scan the original and check the scanned-in image quality.
Only if the user's desired image quality is still not obtained after the above procedure has been performed, scan the original in JPEG or PDF.

❑ Precautions after the completion of the adjustment

The adjustment may possibly cause blurred text, noise or vary the hues of areas. Therefore, carefully perform the adjustment, while checking the scanned-in image quality.

❑ Remarks

If the optional memory (GC-1250) is not installed, originals, which can be scanned in Slim PDF, are limited in size (A4/LT size at maximum). Install the optional memory, in order to select A3/LD, Auto, or Mixed-size in the original size option.

5.5 To Sharply Scan the Original (To increase the sharpness intensity)

Before the adjustment

The image looks too soft and blurred.

After the adjustment

The edges are enhanced. The image looks sharp.

❑ Explanation

Adjust the sharpness intensity, in order to sharply scan the soft and blurred original.

* This adjustment will have an effect on the image scanned in all color modes (Full color, Gray scale, Black and Auto color).

❑ Procedures

* You can start with any of the procedures. But it is recommended to perform the procedures in order, as listed below. You can use one procedure in conjunction with another. But if this changes the image quality more than required or loses the effectiveness of the adjustment, restore the settings made in the previously used procedure to the original ones. Then use other procedures.
* Both the service technician and the user can use procedure (1).
* Only the service technician must use procedure (2).

(1) When scanning the original, press the [EDIT] button on the Control Panel. Press the [+] button to increase the sharpness intensity.

After increasing the sharpness intensity, scan the original and check the scanned-in image quality.
With the sharpness intensity set to the maximum, if further image quality adjustments are still necessary, the service technician must use the next procedure.

(2) Enter adjustment mode [05]. Change the values for codes [1086 to 1088] and [840 to 843] to adjust the sharpness intensity.

Color mode	Original mode	[05] code	Recommended value	Acceptable value range	Default
Black	Text/Photo	05-840	Set a value larger than 128.	0 to 255	128
	Text	05-841			
	Photo	05-842			
Full color	Text	05-1086			
	Printed image	05-1087			
	Photo	05-1088			
Gray scale	---	05-843			

* Setting "0" provides the softest image, while setting "255" provides the sharpest image.

❑ Precautions after the completion of the adjustment

The adjustment may possibly cause moiré. In addition, when text and thin lines in a light-colored background are scanned, the background around the text or line may be eliminated. Therefore, carefully perform the adjustment, while checking the scanned-in image.

5.6 To Scan an Original, while Enhancing Black

Before the adjustment
Scan
Black is not dark enough, compared to the original.
After the adjustment
Scan
Black is enhanced and closely matched with the original hue.

❑ Explanation

When a full-color original is scanned, black is not dark enough, compared to the original. (In general, the scanned-in image is likely to become less dark.) Finely adjust the black density of the scanned-in image, in order to darken black and closely match it with the original hue.

* This adjustment will have an effect only on the image scanned in the Full color mode (including the Auto color mode).

❑ Procedures

* The service technician must perform all adjustments.

(1) Enter adjustment mode [05]. Change the values for codes [1075 to 1077] to adjust the black density of a scanned-in image.

Color mode	Original mode	[05] code	Recommended value	Acceptable value range	Default
Full color	Text	05-1075	Set a value larger than 0.	0 to 4	0
	Printed image	05-1076			
	Photo	05-1077			

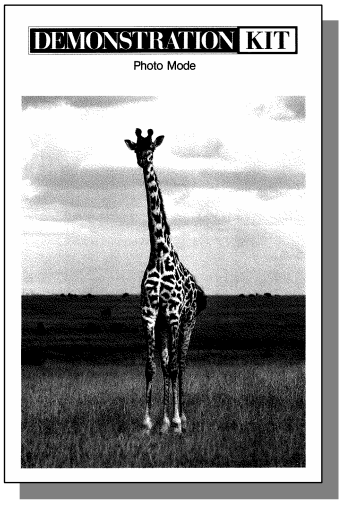
* Setting "0" provides the lightest black, while setting "4" the darkest.

❑ Precautions after the completion of the adjustment

The adjustment may possibly provide the extremely dark background. Therefore, carefully perform the adjustment, while checking the scanned-in image.

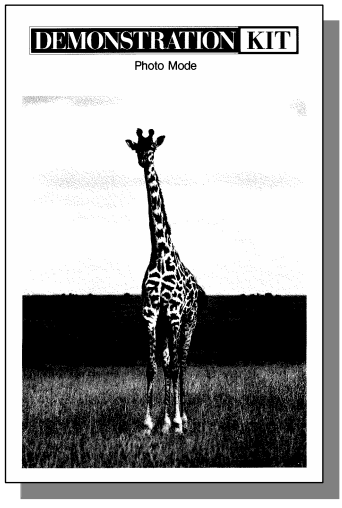
5.7 To Scan an Original with the Desired Gradation

Before the adjustment



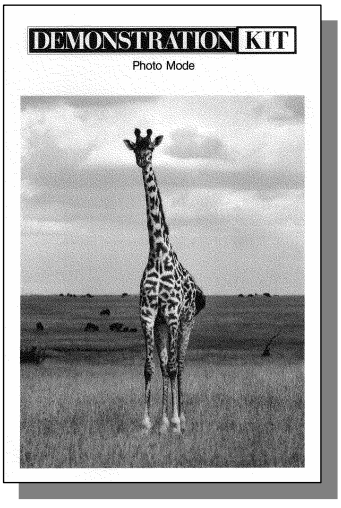
The image is scanned with natural gradation.
(Default scanning)

After the adjustment



Gradation is decreased.

After the adjustment



Gradation is increased.

❑ Explanation

When an original is scanned in the Black mode or the Gray scale mode, changing the scan density according to density area (low-, medium- or high-density area) allows a user to adjust the reproducibility of halftones (gradation). Adjust the gamma curve balance, in order to change the gradation, depending on the type of original or at a user's request.

* This adjustment will have an effect only on the image scanned in the Black mode or the Gray scale mode.

❑ Procedures

* The service technician must perform all adjustments.

(1) Enter adjustment mode [05]. Change the values for codes [880 to 883] to adjust the gamma curve balance of the low-, medium- and high-density areas.

Color mode	Original mode	[05] code	Subcode	Recommended value	Acceptable value range	Default
Black	Text/Photo	05-880	0/1/2	Set a value smaller than 128 to decrease the density. Set a value larger than 128 to increase the density.	0 to 255	128
	Text	05-881	0/1/2			
	Photo	05-882	0/1/2			
Gray scale	---	05-883	0/1/2			

* Set the value in increments of approximately 20, while checking the scanned-in image until the optimum value is obtained.

* The subcode varies according to the area where the density is adjusted. Refer to the table below and set the subcode for the area to be adjusted.

Subcode	Area where the density is adjusted
0	Low-density area
1	Medium-density area
2	High-density area

* Gradation in the Black mode will vary, if the medium-density area is mainly adjusted. But remember that adjusting the low- or high-density area will rarely affect the gradation in the Black mode.

❑ Precautions after the completion of the adjustment

Nothing in particular.

5.8 To Register the Original Mode Optimal for a Particular Type of Original (To have "Custom" selected)

❑ Explanation

If the value for [05] code is adjusted in existing original mode (Text /Photo, Text, Photo, Printed image, Photo or Gray scale), in order to clearly scan a particular type of original, other types of original may not be clearly scanned. In this case, add the original mode option adjusted for a particular type of original as "Custom (User custom)" mode. To have "Custom" selected, add the value adjusted for [05] code in "Custom" mode to the one in reference original mode.

Select reference original mode for "Custom" from among the original mode options.

To have "Custom" in the Black mode, select the existing original mode option as reference original mode.

To have "Custom" in the Full color mode (including the Auto color mode) selected, select the existing original mode or "e-document" mode option where the value has been adjusted to identify whiteout areas, as reference original mode.

* This adjustment will have an effect only on the image scanned in the Black mode or the Full color mode (including the Auto color mode).

❑ Procedures

* Perform the adjustment in accordance with the procedures below.
* Only the service technician must use procedures (1) and (2).
* Both the service technician and the user can use procedure (3).

(1) Enter setting mode [08]. Change the value for code [580] or [590] to select reference original mode for "Custom" mode from among the original mode options.

• Select the original mode option, which is most likely to be matched with the image quality the user desires.

For the Black mode

Value for 08-580	Reference original mode
0	Reserved (Default)
1	Text/Photo
2	Text
3	Photo

For the Full color mode

Value for 08-590	Reference original mode
0	Reserved (Default)
1	Text
2	Printed image
3	Photo
4	e-document

After selecting the reference original mode option, use the next procedure.

(2) Enter adjustment mode [05] to adjust the values in the Custom mode, in order to obtain the image quality the user desires.

• Select the necessary value for [05] code in the table below.

Color mode	[05] code	Adjustment	Acceptable value range	Default
Black	05-7465	Range correction	11 to 14 21 to 24 31 to 34 41 to 44	12
	05-7466			
	05-7467	Background peak for range correction	0 to 255	56
	05-7470	Sharpness adjustment		128
	05-7475	Manual density adjustment center value		128
	05-7476	Manual density adjustment light step value		20
	05-7477	Manual density adjustment dark step value		20
	05-7478	Automatic density adjustment		128
	05-7480	Gannma curve balance adjustment		128
Full color	05-8370	Background adjustment	0 to 50	50
	05-8371	Fine adjustment of black density	0 to 4	0
	05-8372	RGB conversion method selection	0 to 3	0
	05-8373	Saturation adjustment	0 to 255	128
	05-8375	Sharpness adjustment		128
	05-8380	Manual density adjustment center value		128
	05-8381	Manual density adjustment light step value		20
	05-8382	Manual density adjustment dark step value		20

*For further information regarding the codes, refer to the Service Handbook.

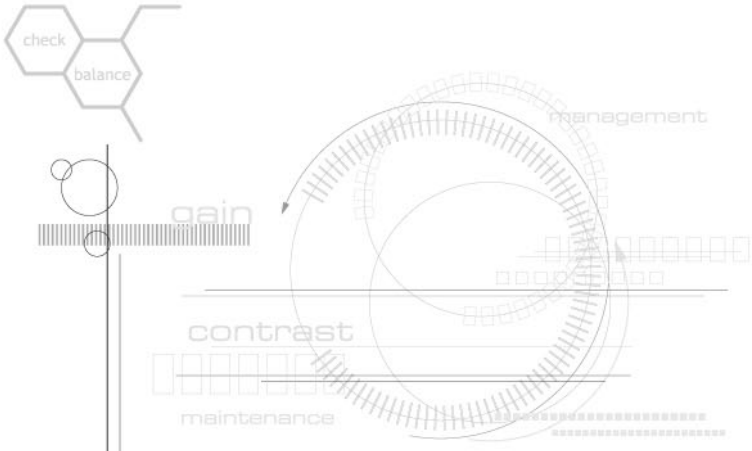
<Note> Select the code for the Custom mode option, in order to adjust the value for [05] code in the Custom mode. Never adjust any values for [05] code in existing original mode.

After adjusting the value in the Custom mode, use the next procedure.

(3) When scanning the original, press the [EDIT] button on the Control Panel. Select "Custom" from among the original mode options.

❑ Precautions after the completion of the adjustment

Nothing in particular.



Imaging Manual

e-STUDIO2500c/3500c/3510c

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